User's Guide™

THE MAGAZINE FOR CP/M & MS-DOS COMPUTER USERS

No. 13 $4.50

Extracting Free Software From Public Domain Libraries

Squeezing & Unsqueezing Data

Checks & Balances

How To Use Free Software

"The Bookworm" by Karl Spitzberg, Lichtenstein Gallery, Vienna; © Arthur Jaffe Inc., New York.

MONTE'S WINDOW™

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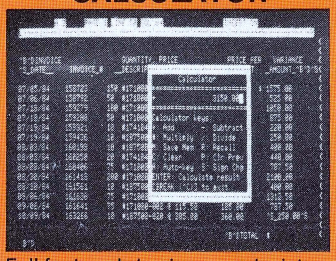

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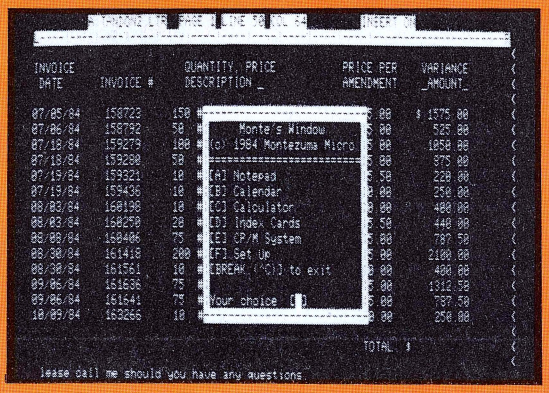

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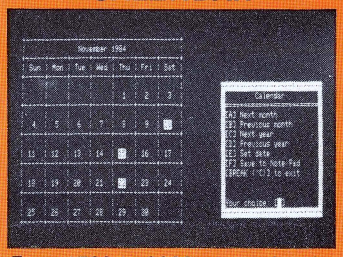

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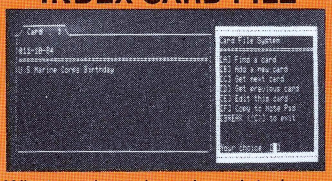

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8-bit Fever

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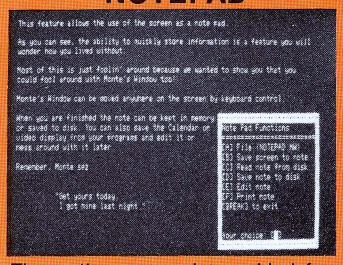

The entire screen is provided for your use. Simply use the arrow keys to move about. Save the note to disk! Call it back up! Print it! Edit it!

See opposite page ▸▸▸▸▸▸

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CBASIC version 2.8..... 85
TURBO PASCAL by Borland. This is the one..... 45

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User's Guide™

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Tony Bove & Cheryl Rhodes
PUBLISHERS & EDITORS

Steve Rosenthal, Kelly Smith
CONTRIBUTING EDITORS

Dana Blankenhorn, Benjamin Cohen, Thomas Howe, Arthur Naiman, Jonathan Sachs, Bob Wolff
WRITERS

Sahnta Pannutti
DESIGNER

Lon Shoemaker (cartoons), Paul Winternitz (photos)
ART & PRODUCTION

Annie Warren
ADVERTISING SALES

William Shoemaker, Kathy Slusser
CIRCULATION

Julie Swanson
ADMINISTRATION

Dan Shoemaker, Rosine Byner
OFFICE

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'01/84 Pay To: GAS                                          $
 <U    >  Memo: CASH PAID FOR GAS FOR CAR

'03/84 Pay To: C.D.E. SOFTWARE                              $
 <COMP>  Memo: CHECKS & BALANCES

'14/84 Pay To: Peninsula Office supplies                    $
 <COMP>  Memo: floppy disks -- cash paid

'14/84 Pay To: Deposit into Checking Account                $
 <DEP >  Memo: Dec 1st half paycheck

'04/84 Pay To: BANK                                         $
 <SRCH>  Memo: monthly service charge

'03/84 Pay To: CASH WITHDRAWAL                              $
 <    >  Memo:

'14/84 Pay To: cash withdrawal from auto teller             $
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eriod covers entire year
     DISPLAY and EDIT   TRUE $    8986.33 BANK $    8986.
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An excellent program for maintaining your personal checking account.

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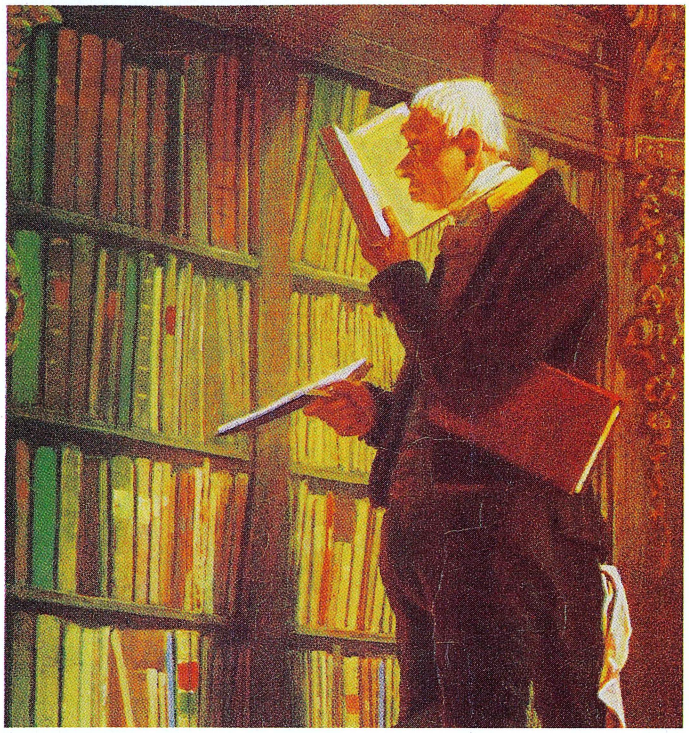
by Tony Bove & Cheryl Rhodes

Free software is usually stored in files that are squeezed to save space. You have to unsqueeze them to use them.



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How to extract free software from public domain library files, and how to create and manage your own library files.

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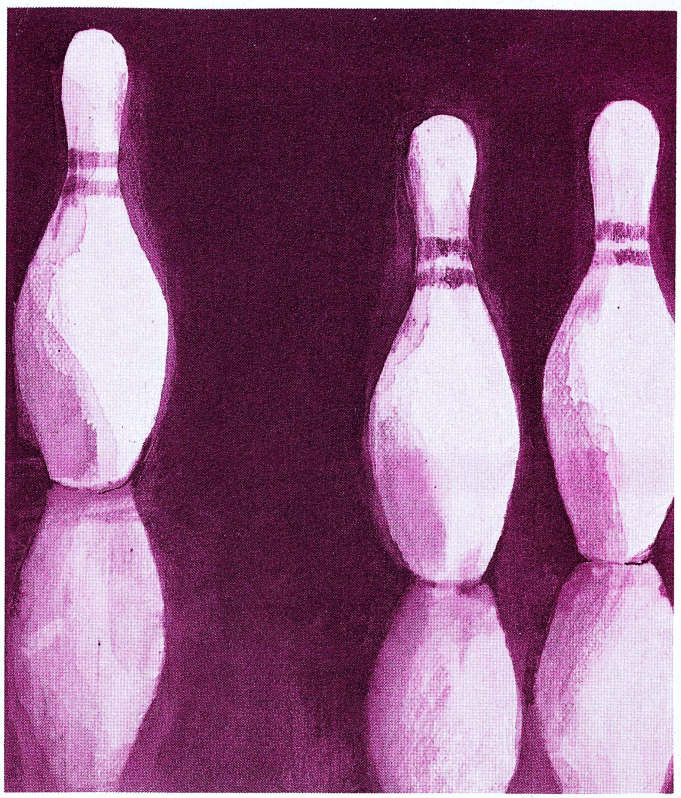

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Local Network of Bowling Centers **66**

by Jim Morgan

A record-keeping and scheduling system using the OSM Zeus 2 computer network with the Condor 3 data base management system.

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Typefaces

We use ***This Typeface*** to show commands and expressions you type at your keyboard, and **this typeface** to show displayed messages.

In summaries we use *italics* along with ***This Typeface*** to show optional parts of commands and expressions. Keywords are usually in UPPER case letters, with your words and data in Upper/lower case.

We also use the symbol ↵ to represent the standard Return key (CR or ENTER on some keyboards), and the caret symbol ^ to represent the Control key (CNTL, CTRL or ALT on some keyboards).

Murphy Eat Your Data?

We all know Murphy's Law and its unspoken corollary — if you are writing a description of Murphy's Law, your disk will surely fail. So be it.

One of us was reading a popular book about a company going bankrupt, and he'd just come across the passage about the company's accounting problems.

The company's accounting software somehow "crashed" and destroyed important data, making it impossible for the company to bill customers and collect receivables.

At that moment we heard a surprised "Oh, NO!" from the other room, and then an exasperated sigh from the person using the computer. Its disk drives were still clicking, and the person looked like he was attending a funeral.

"I just copied a blank disk to a full disk, wiping out the full disk," he stated flatly. "That was my only copy." He stared into space for a while.

Was this disaster preventable?

Most data disasters occur with "fresh data" — just entered and not yet saved to disk or copied to a backup disk. We know that everyone tries to be conscientious about keeping backup copies... that is not the problem! How do you stop the dangerous software tool from destroying the data? How do you stop the disk itself from losing it?

The dangerous tool in our situation was a disk copying program that copies a disk in drive A track-by-track to the disk in drive B. If you put the right disks in A and B — the one to copy in A and the blank one in B — then all will be well. If you switch them by mistake, you will copy the blank disk's blank tracks onto the good disk's data-laden tracks, wiping out the data.

We learned about this problem the hard way. After retyping one full day's invoices we were able to continue operations. We put away the disk copying program and used a file copying program from then on.

The disk copying program was supposed to be a convenience because it copied an entire disk faster than you could copy single files from one disk to another. It was also easy to use, and therefore, we had chosen it for teaching beginners how to do regular computing operations. The most regular operation was copying disks.

Beginners follow instructions very well, because they are frankly scared of what may happen if they don't. We made more mistakes than the beginners when using this disk copying program. Nevertheless, we decided that track-by-track copying programs are more dangerous than they are convenient.

We now use a file copying program exclusively, even though it is slower and harder to learn how to use. We use it because it is harder to make a mistake with it! Safety is first in our minds; convenience an afterthought.

What's more, we follow certain rules when copying files: we move to the *destination* disk (or directory of a hard disk), which is to receive the new copy, and we check for ample disk space. If an old file by the same name exists there, we delete it. This ensures that we don't overwrite the new copy with the old one. Then we copy the new file from the *source* disk to the destination disk.

It is nearly impossible to copy a blank disk onto a full disk with a file copying program. File copying programs have a built-in safety feature: they copy a file to another disk only if the other disk has room for it. The file copying programs do not *overwrite* the data on the other disk unless you want them to.

This is one example of putting safety before convenience. Another is the use of an erase or delete file command that acts on many files at once. Surely you didn't want to erase all those files! Sure it's fast, but didn't you want those last two ".TXT" files — the one with the report for your boss, the other with your resume?

You could have avoided the problem by using the directory display command first, then using the erase or delete file command.

Of course your problems are solved if you have a way to implement constant backup. We know of one data base management program, called DIMS, available in the free public domain libraries, that updates a data base on *two disks* at the same time, thereby increasing your chances of keeping your data intact (although both disks could develop bad sectors at the same time).

Which brings us to another rule we follow with all disks. Every day, whenever we first use a disk, we run a program that looks for bad sectors on it and locks them out so that they are not used. With this practice we ensure that anytime we copy new data to the disk, it will be copied to good sectors. We also run the bad sector finder after erasing files from a disk, and we run it immediately after formatting a disk.

If it sounds like we're paranoid about disks, that doesn't mean that the disks we are using are not going to fail. We habitually make two backup copies of everything we write, plus the original, on 8" disks, then store another copy on $5^1/_4$" disks. We also accept whatever happens as our fate, without too much stress. But when you give Murphy a sector, he'll take a megabyte of your data.

This new section, called "ESCapades", features opinions, anecdotes, perspectives and reports on the personal computer industry, edited for readers at all levels of computing experience. In this space you'll find interesting reading, perhaps entertaining as well as educational, in a prose style that we hope will be evocative and pioneering.

For a while we'll play it as it goes. You may find facts, unfounded rumors, pure fiction, or even poetry. The section is named after the ESC (ESCape) key found on nearly every keyboard. This key is used in most cases to interrupt a program, or get you out of limbo (wait states), or bring you back to whatever is considered the "normal" level of operation (the command line).

For you, this section might be an escape from the in-depth tutorials that make up the bulk of a typical issue. Time should be set aside for play as well as for work, for philosophical pondering as well as for "batch" processing.

For us, this section *is* an escape from our typical writing and editing chores. We get to flex our "brain muscles" and express ideas, and publish the ideas of others.

Watch this space for new stuff.

At the Shows: Candid scenes

photos by Paul Winternitz

With contributing editors Kelly Smith and Steve Rosenthal we scoured the recent computer shows for interesting finds and innovative new products. Unfortunately the routine of computer shows has gotten dull. A headline in the *COMDEX Show Daily* screaming "Industry Moves To the Right" just about summed it up. Apple's booth was the only one to stand out in this sea of IBM blue.

Another in *PC Week* provided the contradictions: underneath the heading "Comdex: Maturity, Not Glitter, Sets the Tone" were glitzy color photos of the show — a glittery Vegas showgirl clad only in jewels handing an award to a chubby Mitch Kapor (Lotus), the wired-for-sound Tallgrass booth decorated as a jungle with snakes, birds and other tropical creatures, and Data General's armored knight hyping the DG/One lap computer. If this is what they call "maturity" give

Philippe Khan, of Borland International (Turbo Pascal), joins the band with a spirited sax solo.

me precocious!

A taxi driver in Las Vegas (COMDEX show) summed it up with this remark to bearded, pony-tailed and sandaled Steve Rosenthal — "what's a relic of the sixties doing here?"

Take heed, you who consider yourself hip and coming of age in this new technology: the hype and glitter has turned our beloved personal computer industry into the older generation's Last Vegas Act.

Lucky for you that you don't have to attend these gala affairs. You can get the gist of it from Dana Blankenhorn's piece about Comdex in this section.

At the Second IBM PC Faire in San Francisco (Oct. 25-28, 1984), we expected no earth-shattering news; in fact there were very few press conferences. MicroPro waited till the following week to introduce WordStar 2000 (a new version of WordStar for the IBM PC and MS-DOS computers), and Osborne Computer Corp. held their press conference for the new Vixen computer at the other end of the bay in their new smallish headquarters in Fremont.

The IBM AT was very much in evidence. Kelly describes the AT as "a Lamborgini stuck in first gear," and predicts that the computer will eventually house more processors, perhaps even the National Semiconductor NS-16032, delegating the 286 to processing input/output.

In one corner of the PC Faire a few pin-stripe blue suits from IBM were putting on a fantastic demo of the IBM Professional Graphics Adapter board housed in an AT, which can display a color image on a high-resolution color monitor with breathtaking clarity. The resolution is 640 x 480, with your choice of 256 colors at any one time on the screen from a palette of 1024 colors. The board is controlled by an Intel 8088 processor with 320K of RAM, and conforms to the VDI (virtual design interface) standard (GSX from Digital Research is also based on the VDI).

With the joystick interface built into the AT BIOS, the system could be made into an excellent low-cost CAD/CAM system.

Some criticisms were levelled at the AT's high-capacity floppy disk drive (1.2 megabytes). It seems to show problems when you use the same 96 TPI disk with several ATs, and unreliable operation when writing from a high-capacity disk to a 48 TPI disk and subsequently reading from the 48 TPI drive. The high-capacity disks only partially alleviate the problem of backing up large capacity hard disks. Many vendors claim the world doesn't want yet another disk format for distributing products.

So far the only firm to offer a hard disk for the AT is Microcode of Fremont, CA. Microcode offers a ten megabyte hard disk with a 10 megabyte removable cartridge for backup. Some people think that the ten megabyte removable cartridge is the only sensible way to handle backups with a hard disk.

The early models of the IBM PC AT computer are bought for speed and performance reasons — anyone "in the know" changes the system clock crystal to make the AT run at 8 MHz, and there seems to be no problem with operation.

The AT's keyboard layout is little better than the PC's with the wide Return key, indicators, and a new SYS key waiting for an application to utilize it.

IBM's Topview system is the next big attraction for IBM computers. Topview runs DOS as one "task," and you can theoretically run other operating systems as other "tasks." Another step down the road toward the multi-operating-system computer. However Topview is character-oriented, not graphics-oriented like GEM (Graphics Environment Manager) from Digital Research.

Some say Topview will dominate as the standard operating environment, Microsoft's Windows will be too late to sufficiently capture the market, and Digital Research's GEM will suffer also because few developers will write applications for it. Others disagree strongly and say that GEM has a much stronger chance than Windows now that Atari's new machine will feature

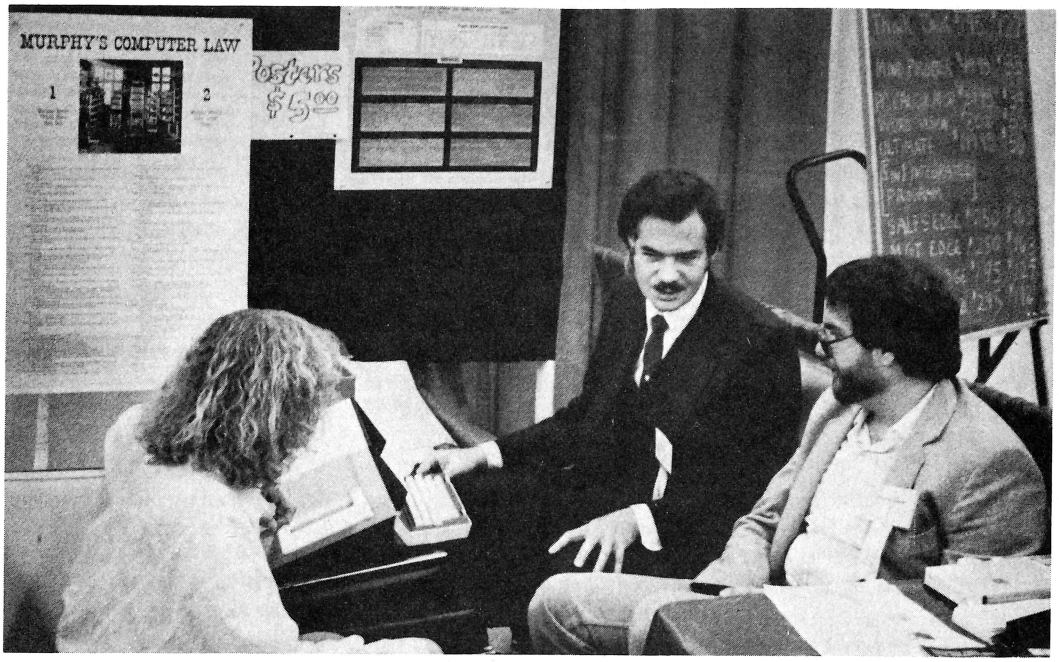
Adam Osborne with Tony Bove: "So where's tonight's big party?"

it as the operating environment. GEM provides a MacIntosh-like screen-and-mouse interface.

As for portables: the Data General One was very much in evidence. Its barely-readable screen and $3^1/_2$" drives may hamper its success, but it is a useful PC-compatible computer. The Morrow Pivot, also PC-compatible, has captured a lot of attention with its low price ($1995) and standard $5^1/_4$" drives.

At the PC Faire Adam Osborne dropped by our booth for a look at the new Vixen computer from Osborne Computer Corp. (he is no longer involved directly with OCC). He remarked that it was "a sweet machine" but he has no intentions at this time of including software for CP/M computers in his Paperback Software line.

A good time was had by all at the Borland International costume party at the Vorpal gallery, where Turbo Pascal (Borland) honcho Philippe Khan joined the jass band for sax solos. Philippe can really play sax! He put himself through school playing jazz in nightclubs. This industry is filled with interesting people.



Adam Osborne tries the new Osborne Vixen computer. "It's sweet," he says, "but I probably wouldn't buy one at the moment."

Comdex Las Vegas: Competence Is In

Dana Blankenhorn

I can usually see things coming. The morning of the recent election my "Mr. Natural" poster, which I'd finally framed just a few months earlier, dropped off the wall. The new frame shattered all to hell. And you know what happened to the Democrats.

I've learned from hard experience not to question such things. So it was with some trepidation that I got onto the plane for Las Vegas on November 12. It was Mr. Natural all over again. In the poster, Mr. Natural points to the sky and says "Quest into the Unknown!" The man standing next to him asks, "Is that so terrible?" To which Mr. N. replies, "Of course not... used to do it myself."

Much to my surprise, we arrived safely in Vegas and I took to the Marina Hotel, where the lovely people of the Interface Group had rented me a room. Said lovely people would pay all my bills and $140 per day besides just to wander around the show and report what I saw. Without them I wouldn't know where to go first, and couldn't afford the trip.

In the years since Comdex first landed in Vegas, the show and the town have learned each others' secrets. There was no panic in the city's preparations this year, just an expectant mood among the cabbies — they figured to have their best week of the year. I learned on the way to the Marina that Comdexers don't know how to tip, that they make dinner reservations which they neither cancel nor fill, and that they don't gamble the way lawyers or doctors or Shriners do. For once, the cabbie concluded, he'd be the happiest guy in town. He got a big tip.

I'd done this gig in 1983, too. At that time I'd gotten my head into trouble because Las Vegas is a very foreign place and I'd brought nothing familiar along. This time, I carefully strung my room key onto my home keychain, scrambled into my normal work-at-home clothes, and called home to remind Jenni, (wife and best friend) that she'd be joining me Wednesday. Then I walked to the Convention Center to report for work.

Before a show opens may be the best time to catch it. Each booth is a separate beehive of activity, with cute women in jeans directing crews of engineers and movers around and around, making everything just right. I noticed right off that this show would have more wall panels than last year, that white would be a dominant color, and that competence would be very in.

Over at the office editor Peter Bochner already had the *Comdex Show Daily* unpacked and running. He was already calling the convention center office to get the carpet out of there because the static electricity was frying disks. I nodded approvingly, because last year he didn't make this call until late Tuesday. Perhaps next year the carpet won't be there at all.

A few hours later I was at the Landmark, where I found what would become the best applications story of the week. Mehran, a Pakistani from Baylor University who works at the Desert Inn, demonstrated how computers have changed the Strip. With his right hand, he was playing one of those new computerized poker machines: the machine is built into the bar and a TV screen stares up at the player, who throws quarters or dollars into the table. The winnings spill into a metal coin holder at the player's feet.

With his eyes and left hand, Mehran was working some numbers on a Keno board built into the far wall, passing money with a middle-aged lady in fishnet stockings. Odds and winners are tallied automatically on computers so they can play 6-10 games an hour, instead of the 2-3 they used to play. Overhead Monday Night Football was showing one of their new computer graphic-generated touchdown maps, with runs shown in red and passes in black. Mehran had a few dollars on the Raiders, I think. Somehow, Mehran was also keeping conversations going

with his wife, a native Texan who was playing quarters to his left, and yours truly, sipping a happy-hour beer to his right.

While Mehran played the shift at the bar changed. This is a little like the changing of the guard at Buckingham Palace, except before computerized billing you had to settle up on drinks before the new barkeep came on duty. No more: Mehran hardly noticed the ceremony. And when I mentioned that my alma mater, Rice, would play his Baylor Bears that Saturday in football, he checked over his shoulder at an electronic display showing the latest odds and promised to put some action there, too.

The question I put to you is this: is Mehran computer-literate? I think he is, which may be more important to the future of this business than anything else which happened in Las Vegas last week.

Shortly after I met Mehran, Bochner arrived and we headed over for dinner at the Hilton. At Benihana we joined the six ladies of his permanent staff and sipped Mai Tais while watching a robotics floor show called "Jambird-ee."

Jambird-ee is an adult version of Chuck-e-Cheese, and could make lounge acts obsolete. It features a dozen robotic birds in a tree and a Japanese Buddha. They do a 45-minute song and dance routine, during which they roll their eyes, lip-synch old show tunes and tell bad ethnic jokes, all under computer control. Spotlights are timed to go on and off with whichever character is "singing," and in the middle of the show a set of blinds opens to reveal two robotic dogs, which also lip-synch bad jokes while strumming guitars with their paws. Once every two hours — 7 or 8 shows a night 7 nights a week. When patrons tire of this act, Benihana buys a new program, changes a few robots, and starts running a new show.

Tuesday, November 13

Bochner said he had no use for me Tuesday, so I took a bus downtown and walked back toward the Convention Center. Maybe I was looking for the "real" Las Vegas.

I found it somewhere near Vegas World, a skyscraper in the middle of nowhere which a failed politician named Bob Stupak ("the Polish Maverick") has re-painted in honor of the space program. Check this, an astronaut on a rope, a space shuttle, and the Earth, all 12 stories tall and red, white and blue. A blood vessel popped in my right foot, which meant shooting pains up my leg with every step. I'd be playing in pain the rest of the week, which would at least give me something to talk about.

Wednesday

The show opened the next morning and for my first assignment I traveled to the MGM Grand Hotel, there to welcome new exhibitors with the question, "What was the most important thing you've done regarding channels of distribution this year?"

Everyone I talked with had a ready answer, usually punctuated with cigarette smoke and a finger-in-the-chest, about how this new (PICK ONE — ‹printer› ‹program› ‹hard disk subsystem›) would find "shelf space" among the "VARs and VADs" or how they'd found a niche among some select "Fortune 1000 companies who are trying it out." No one there could answer the really obvious question, "What's someone going to do with all this stuff?" Fortunately, I hadn't been assigned to ask it.

Another trend jumped out at me, while roaming these halls. Most of the stuff on display was either Japanese, Korean, or Chinese. And while a few years ago I'd heard stories of how "We custom-designed this and had it produced where the wage rates are lower," this time the story was "We have an exclusive import agreement on this piece of equipment."

A prediction: to stay in this business learn Japanese, not BASIC.

You'll be glad to know that there is still one CP/M hang-out at Comdex: the *Show Daily*. They're using Eagle IIs with double-sided double-density disks which all have Superscript on them. When you finish a story you take the disk out, hand it to the editor, and after Peter Bochner edits it he takes the disk out and walks into the next room, where he sticks it into a typesetting machine. It's comforting to work at the *Show Daily* — there's an air of reality about it.

That's certainly not true of the Comdex show floor. My second story for Wednesday never appeared, but it involved walking around the floor and picking up whatever gimcracks, gewgaws, or other freebies anyone cared to give me. About the neatest thing I got was a plastic bowler hat, under which I stood for a portrait with Laurel and Hardy imitators. Hardy posed holding the end of my tie, Laurel did his crying number. Their employer, Ziyad, makes sheet feeders.

I also got coasters, keychains, a bunch of buttons, and some sweat bands from Ziff-Davis, then put it all on and posed next to a life-sized blow-up of Dom DeLuise. With a goofy smile on my face. The Inyourface (Interface) Group never ran the story, and you can understand why.

After posing I visited the press room, mainly to check on what parties might be going on that night. I wrote up a little list, and hit the shuttle bus early.

The plan was simple. I'd gotten two nametags, one through the Interface Group, the other through my own company, @Have Modem, Will Travel. Jenni would put on whichever I didn't need at the time, and we'd take in the show together.

Too bad we didn't think of this two years ago. I've heard many wonderful stories about Comdex parties, and even went to a few. The only real blow-out of this show would be hosted by Ericsson, a Swedish computer company which brought in Rich Little to show how they could impersonate a no-class American computer company.

The other company parties we attended consisted mostly of fighting for elbow space near bars or buffet tables. The best tactic, I found, was to pig out at the first place we went to, then hang on with wine or beer until everyone we needed to see was seen, then head home before anyone threatened to show us a good time.

Our first pig out was at *Computer Retail News*' suite in the MGM Grand. 90% of the people there, it turned out, were either advertising executives or salespeople, but off in one corner I spied what seemed at first to be some human beings. Turned out to be an editorial meeting, with one kid reading from a notebook about how one computer store chain was trying to buy a second chain, and how the second chain was denying it. All four reporters clustered around the notebook nodded in urgent agreement that this rumor was very big news, and their editor agreed. "I'll write him a letter," he said of the second computer store magnate, in a tone which implied the kid done good.

Once, I would have loved to have joined their little band and chase rumors myself. Except, if you back up and stop to think about them, the rumors really don't mean anything. If one company is thinking of buying a competitor, he either will or won't. When he does it's news. If he doesn't? If a tree doesn't fall in the forest but someone claims to hear it, does it make a sound?

We quickly headed for the Sahara, there to receive an autographed copy of "Quotations from Chairman Morrow" from George Morrow himself. Morrow offers what passes for philosophy in this business. He

takes nothing seriously, least of all himself. He seems to have Buddha-nature. (Question: Does a dog have Buddha-nature or not? Careful, if you answer yes or no you lose your own Buddha-nature.)

On this evening Chairman Morrow was busy celebrating himself and signing books. So we settled near the buffet to hear one of his vice-presidents explain vertical market selling.

"I went to the funeral directors' convention in Dallas," the vice president said. "I wound up at a party given by one of the big boys in this business, who must plant 300 people a year. Most funeral homes are big if they plant 200 a year. The party was for an old boy from Arkansas who was running for Chief Undertaker or something. They take this very seriously, and the old boy was in a tough race, against another old boy from Pennsylvania and some Yuppie funeral director from Texas. The fear was the old boys would split the vote and the kid would get elected.

"I asked for a drink and tried to stay out of the way. After a while I asked for a second drink, a light scotch and water, and looked for a way to head out. I was seated on this long couch near the wife of the old boy from Arkansas, when suddenly everyone fell silent and eyes turned toward the door. It was the Yuppie, crashing the party!

"Needless to say, everyone was shocked! I turned to my drink, but it was all scotch, horrible, and I spat it out, spilling the rest on the wife of the old boy from Arkansas. I headed out of there in a hurry, and right behind me came the waiter from that party with a new drink in his hand. He was laughing to beat the band, and the new drink was perfect.

"The next day the Yuppie won." What does this prove, I asked the salesman. "I sold him a computer system," he replied. "His friends, too." Score one for Morrow — he'll get you in the end.

Cheryl came up just then, and we headed out. Next door Apple was holding a loud, fun, and raucous party, and we headed right into the arms of the Apple gestapo. This party is Closed, we were told, to employees only. From there we went to Franson & Associates' bash at the Hilton, where we queued up 15 minutes in hopes a server slicing away at a steer leg could place a slice on our dinner rolls before the beef was gone. By the time I got mine I was ready to gnaw at the bone.

The *Users' Guide* party was just right. Five aging hippies sitting around some Anchor Steaming, celebrating the CP/M system they use, and wondering why the world has gone someplace else. Finally deciding we don't really care, that it really doesn't matter. A program is a program is a program: if it's non-trivial and it works so much the better. (Answer to the question about Buddha-nature...Ask the dog.)

Great wealth would be nice, though.

Thursday

The next morning opened with my only hangover of the week (must have been the Anchor Steaming) and a breakfast at the Flamingo, where I would hear the 1985 hard disk outlook. Rather than sit through it, I opened my notebook and did my interviews before the meal. I learned that the Japanese are now in total control of the 5-20 megabyte market, while American start-ups are very enthusiastic about sputtering, a technique of coating hard disks so you can fit more bytes on a platter. Walking out through the casino I heard the overture from "Tommy" over the house sound system.

That nearly cured my hangover, and I settled in on the shuttle bus next to a Korean who told me he was here to "see what's new." "Good luck with that," I told him, and quickly moved to the back of the bus because the guy in front of me weighed about 350 pounds. He spread out right over my legs, and it hurt. But between the two of us, it was I who was most out of place.

After filing a few more stories, I headed over to the press room, in hopes of securing party invitations and, more important, of impressing some editor with my repartee and securing some work down the road.

Comdex press rooms have really changed in the year and a half I've been visiting them. In 1983 they would be filled with editors looking for free lancers. Now they're divided into two camps — kid reporters psyching each other up over sales rumors and editors longing for the "good old days" — 1982. Editors who once talked only about the show, now talk about who's doing what to whom around magazine offices. I used to cover the Apparel shows here in Atlanta, and it was a lot like that. People don't talk about socks at the sock market — they talk about themselves.

On the way back across the floor I ran into Bruce Wilson. Bruce and I went to school together: he was an engineer and I did whatever it is I do. Bruce and I hadn't met since graduation, and at first we didn't recognize each other. Once we did, we promised to meet for dinner that night.

First, however, there was a command performance for me at Bruce's hotel, Circus Circus. An Atlanta company, Digital Controls Inc., was throwing a party in room 1410, which turned out to be the Royal Suite at the top of the hotel. DC's president, a 23-year old wheeler-dealer named Mike Macke, was more than happy to see a reporter there, and at once he took me on a tour of the place. "This was put in by the man who built the hotel," Mike explained, "and when he sold it he put it in the contract he could keep this place for life, and get all the drinks and food he wanted from room service free.

"It's something." Amen. Over a dozen different rooms, on two floors, all done in the same gaudy, Las Vegas pink-red. One bedroom has a vibrating bed, another a heart-shaped waterbed, and there's a "library" filled with *Readers' Digest* condensed classics gathering dust.

"We got this place free for the week," Macke concluded. How? Glad you asked. Digital Controls' first product is called the "Little Casino." It's a lot like the machine Mehran was playing with, except it plays blackjack, and it doesn't pay off in coin, just free plays. That means it's legal just about everywhere. Macke's success in placing his gambling machines throughout the country has made him something of an underground hero in Vegas, it turns out. His latest trick is to hook the Little Casino to a videodisk player, add a slot for ROM packs, and sell the package as a training device called The Learning Center. The ones he had on display teach WordStar and dBase II.

After enjoying one of the cheap buffets with Bruce, we headed back to the *User's Guide* suite, from which we hoped to hitch a ride to the next party. Tony & Cheryl were there with Ted Nelson (author of *Computer Lib* and other books, and founder of Xanadu).

I have a suspicion about what started Ted Nelson telling stories. Turns out he wrote the first computer book Jenni and I read. We found it in the basement of a house we were renting in Birmingham, Alabama. The landlord was a very strange sort of man who put burglar bars over every window and then moved out to the suburbs with his gun collection. A few days after we finished reading Ted's book Jenni got her first programming job (she'd been an accountant until that day) and I got fired from my newspaper job — an hour after which I had my first job reporting about computers.

As soon as she heard Ted's

name Jenni fixed him one of these intense stares of hers, the kind that draws people out faster than sodium pentathol. Ted kindly reminded us that what we find beguiling about computers when we first encounter them is the Platonic perfection with which they mimic human thought in inhumanly logical ways. He talked about how you can take things out of your head and put them onto silicon, and turn them into something else again, so you wonder who created the result. Was it God, man or Buddha? (A computer doesn't know if it has Buddha nature or not, and doesn't care.)

Tony drove eight of us in a tiny Toyota to the party at the Desert Inn hosted by columnist John Dvorak (*InfoWorld*), publisher Will Hearst, and writer Jerry Pournelle (*BYTE*).

The Dvorak/Hearst/Pournelle party was, for me, like walking in between the pages of a magazine. Barry Workman (Workman Associates) explained why he preferred science fiction conventions, the Pournelles were rampaging, and the nose brigade closed off the back room and returned to the party laughing. Philippe Kahn (Borland Int.) stood in a tuxedo pouring champagne for everybody, including some on the head of his former competitor. People in scruffy suits walked around quoting each other. A photographer from *Infoworld* snapped my picture. George Morrow was followed about by an interviewer with a tape recorder, recording his every word.

Now I don't have to read the social and rumor columns in various computer magazines next month. One chore saved.

Friday

This year's Comdex was a ripping good architecture show. Texas Instrument's booth looked like the Alamo, complete with Randolph Scott staring down from the parapets. Apple built a temple to itself with fake-stone walls, and everywhere companies were erecting monuments from which they surveyed their neighbors. Show-goers walked around collecting buttons that read "Don't Panic" and "Don't Worry", which I took immediately for what they meant: "PANIC! WORRY!"

I walked into one booth that was so overbuilt it was totally dark inside. I asked one of the salesman about this and he admitted, "Yeah, this is the first time we've seen it built up like this. Got a match?"

From their towers and forts, it was easier for companies to see each others' markets. Hardware companies showed off their new Same Old Software, while software companies showed off their own new Same Old Software. And everyone criticized IBM for not doing anything new.

You may have noticed by now there's not much about computers in this report. It's true — there was nothing new here. MS-DOS is just rehashed CP/M. This is the best they could do.

- Two mini-computer makers showed four-pound portables with 25-line LCD screens. Which means they're guaranteed to fail.
- The device I most enjoyed was an OCR from Great Britain which can read all of four type fonts when you wave it (correctly) across a piece of paper. Of course it's at least a year old.
- I heard a lot of talk of a plotter which walks across the paper instead of hanging on a wire frame over the paper. Someone else doubtless saw this.

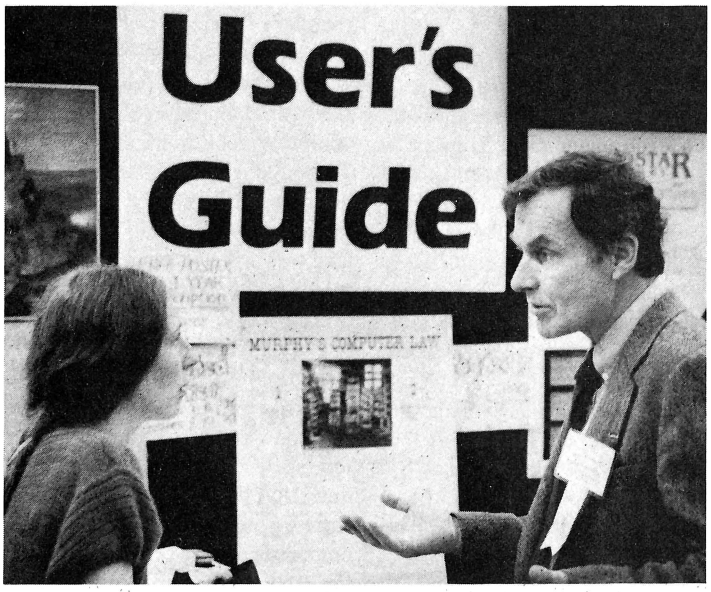
Next year I'm saving up to go to the Robotics convention. Suggest you do the same.

A telling vignette. One of the most intriguing new computers was brought in by Leland Strange. Strange is Quadram, and, strange, Quadram doesn't make computers (they make them better). I learned Leland just found this baby on Tuesday, which is why you may not have heard of the Datavue 25. It weighs about 8 pounds, looks like a larger white version of the Morrow Pivot, except the LCD screen tilts like the Radio Shack 100's and it uses $5^1/_4$" floppies. It also runs Flight Simulator, or so says Leland. Your task, if you care to accept it, is to find out which Japanese company gave Leland this here box, and ask how long it will take until they don't need him anymore?

Who needs to worry about IBM?

After about Friday Noon, Jenni and I decided to visit Las Vegas while we were in Comdex. We found three different kinds of electronic Keno (with light pens, push-buttons and touch screens — I preferred the first), computerized slot machines with what look like nine wheels spinning around and around, and of course the continual light show which is the Las Vegas Strip. You can look around at the losers and feel sorry for them, or you can admire man's ability to make something out of a godawful desert.

Dana Blankenhorn
@Have Modem, Will Travel



"Is CP/M dead?" Cheryl Rhodes gives advice at the User's Guide booth.

Sleaze Patrol: Naiman's last excuse

I'm not lazy, and I love writing this column. It's just that MacBook turned out to be more than twice as long as I planned, which means I ended up writing at least 40,000 extra words. Since I agonized over every one of them (as I always do), the rest of my life got thrown just a little bit off schedule.

As if that weren't enough, the other book I was working on, *What Every Kid (and Adult) Should Know About Computers*, also ended up 50% longer than I thought it would be, and then I had to produce it as well. ("Producing" a book means you hire the copy editor, proofreader, photographer, designer and typesetter, supervise all their work, and make sure everything gets to the printer on time. It gives you a lot of control over the book — which is why I wanted to do it — but takes an incredible amount of time.)

I am well aware that writing Sleaze Patrol is a sacred duty for which — and I say this with a profound sense of humility — I have been chosen from among all the people of the earth. I can only say that I am painfully conscious of my awesome responsibilities and I swear on all that's holy to me (Beethoven's Ninth, white chocolate mousse and Lenny Bruce) that I will produce a full-length column for the next issue.

Free Software, Part 2: How To Use What You Get

The public domain libraries have useful programs, but they're scantily documented. Here's more information about how to use them.

by Tony Bove & Cheryl Rhodes

Free software is "packaged" differently than commercial software. Some free programs are ready to run but contain only help messages and no extra documentation. Some are stored in larger *library files* and you have to *extract* them, others are compressed into a *squeezed format* and you have to *un-squeeze* them. This issue contains tutorials covering these topics.

Whether or not the programs are squeezed or stored within library files, they may also require other programs to run. Some require a form of BASIC (such as Microsoft BASIC, CBASIC, or IBM PC BASIC), others require *language compilers* like Pascal (notably Pascal-Z), and so on. The clue to what you need is in the filename extension of the program. For example, the program filename MODEM.ASM provides a clue — the ".ASM" part, or *filename extension*, tells you the program is written in assembly language. This "for starters" explains all that.

Filename Extensions

The most popular programs in the public domain are stored in files with the filename extension ".COM", ready to be used as a program. Many others are available in files named with the extension ".OBJ" (e.g., FINDBAD.OBJ).

When you receive ".OBJ" files, you can rename them on your computer to have the extension ".COM" (e.g., DU.COM) using this command:

```
A>REN DU.COM=DU.OBJ ↵          (CP/M)

A>RENAME DU.OBJ DU.COM ↵       (MS-DOS)
```

You can then run the program by typing its name as a CP/M or MS-DOS command:

```
A>DU ↵
```

This command runs the DU program (Disk Utility).

If you can get DU.COM on disk, you don't have to rename it as shown above. Some libraries have files with ".COM" extensions. For example, PC-SIG disks have ".COM" files ready to use with MS-DOS.

FOG and other user groups keep their libraries available to bulletin board systems, where ".OBJ" is used to differentiate public domain programs available to callers from other programs used to manage the bulletin board system. Otherwise, ".OBJ" is synonymous with ".COM", but ".OBJ" files must be renamed to ".COM" before you use them.

Here's a brief summary of filename extensions you are likely to find in the public domain libraries:

- .ABS Abstracts (brief program descriptions).
- .ASC ASCII text files — usually MBASIC source files.
- .ASM Assembly language source files (CP/M-80 and MS-DOS).
- .A86 Assembly language source files (CP/M-86).
- .BAS CBASIC source files, BASICA (PC BASIC) programs, or MBASIC programs.
- .BAT MS-DOS "batch" file, can be typed as a command.
- .BAK Backup file created by ED, WordStar or other word processing program or spreadsheet program.
- .C "C" language source file.
- .CAL SuperCalc spreadsheet.
- .COM CP/M-80 or MS-DOS program, can be typed as a

command.

- .CMD CP/M-86 program, can be typed as a command.
- .CMD dBASE II command file (CP/M-80 only).
- .DAT Data file used with a program or system.
- .DOC File containing text explaining how a program works — called a "document" file.
- .EWF Easywriter test file format.
- .EXE MS-DOS executable program, can be typed as a command.
- .FOR Fortran language source file.
- .HEX File produced by using LOAD to prepare a program for memory and usage in a CP/M-80 system.
- .H86 File produced by using GENCMD to prepare a program for memory and usage in a CP/M-86 system.
- .INT "Intermediate" (semi-compiled) CBASIC program.
- .JRT JRT Pascal source file.
- .LBR Library file containing regular files.
- .LIB "Library routines" for use with a computer language.
- .LST Printable listing of a program.
- .MAC Assembly language source file for use with the MAC macroassembler from Digital Research, Inc.
- .MSG File containing important messages.
- .PAS Pascal language source file.
- .PIC IBM PC color graphic screen images.
- .PRG dBASE II command file (CP/M-86 and MS-DOS only).
- .PRN Printable listing of a program.
- .REL "Relocatable" module of a program, for use with another program.
- .SUB Submit file for use with SUBMIT utility (CP/M-80 or CP/M-86).
- .TXT General text file, may contain explanations of how to use programs.
- .VC VisiCalc spreadsheet.
- .WS WordStar text file.

NOTE:

There are many other filename extensions in use in the public domain, but their usage is not standardized. The best way to tell the type of a file is to read the ".DOC" or ".TXT" or other text file associated with the file in question. Also, any extension that has the letter "Q" as the middle letter (second letter of the three-letter extension) is a *squeezed* version of a file. You must use USQ, NULU, NSWP or similar utility to un-squeeze a squeezed file (these will be covered in future issues; NSWP is described in issue #10.

Assembly Language Programs

Programs supplied as files with the ".ASM" or ".A86" extensions have to be *assembled* before you can use them. You need to learn how to use the ASM program (CP/M-80) to assemble ".ASM" files, or the ASM-86 program (CP/M-86) to assemble ".A86" files, or the Macro Assembler program (IBM or Microsoft) to assemble MS-DOS ".ASM" files. (There are not nearly as many ".ASM" source files for IBM PC and MS-DOS computers as there are for CP/M computers; most of the IBM PC and MS-DOS public domain programs are written in BASIC or available as ".COM" files.)

First you should understand how an assembly language program is created. A programmer starts by writing the program's text and storing it in a "source file." This file has the extension ".ASM" or ".MAC" for CP/M-80 programs, ".A86" for CP/M-86 programs, and ".ASM" for MS-DOS programs.

In order to test the program, the programmer must first prepare the program to be loaded properly into the computer's memory. In CP/M-80 systems, the programmer uses the LOAD utility; in CP/M-86 systems, the programmer uses the GENCMD utility. Both are described briefly here. In MS-DOS, the programmer uses the macro assembler from IBM or Microsoft.

After preparing the program for memory (it now has the ".COM" or ".CMD" extension), the programmer can run the program and test it. If the program needs modification, the programmer must return to the source file (".ASM", ".A86" or ".MAC" extension) and make the changes in that file, then assemble the program again and prepare it for memory.

If you intend to write an assembly language program, get a book on assembly language. Assembly language is perhaps the most difficult programming language to use; however, anyone can make modifications to a program written in assembly language by editing the source file, and then performing the operation of assembling the program and preparing it for memory.

Assembly language source files are text files created by a text editing program like ED, or a word processing program like WordStar® (MicroPro). Someone with minimal training can open a text file with ED or WordStar and change its contents. You may not understand the text in the file, because it is written in assembly language, not English. But given the appropriate instructions for what to change, you can perform the change as you would edit any text file.

For instructions on using ASM and ASM-86, see issue #10 ("From Source to Object: Executable Programs").

For more information about programming in assembly language, we recommend *Inside CP/M* or *Inside CP/M-86* by Dave Cortesi (Holt, Rinehart and Winston). There are also many other books about programming CP/M systems.

BASIC Programs

Many public domain programs were written in a version of the BASIC language for CP/M-80 called MBASIC (Microsoft BASIC). The MBASIC programs usually have filenames that end with the ".BAS" extension. These programs cannot be run in your computer unless you have a program called the MBASIC Interpreter.

The MBASIC Interpreter is a commercial program you need to write and run MBASIC programs. Fortunately it is provided free with many CP/M-80 computers including the Osborne, Kaypro, Morrow and others, and is available for ev-

ery CP/M-80 computer from dealers who carry CP/M software.

Microsoft, which created both MBASIC for CP/M and BASIC for the IBM PC, also created CP/M's rival MS-DOS. MS-DOS is very similar to CP/M, and the IBM PC BASIC (also supplied with MS-DOS for PC-compatible computers) resembled MBASIC in many ways. It is not surprising that many MBASIC programs written for CP/M systems have now been rewritten for MS-DOS and PC-DOS. These programs can be run in your IBM PC or PC-compatible computer if you have the IBM PC BASIC Interpreter or Compiler, or the Microsoft generic versions of the Interpreter or Compiler. Usually the Interpreter is supplied with the computer.

Other BASIC languages are also used in the CP/M and MS-DOS world, most notably CBASIC (Digital Research, Inc.). CBASIC programs that were compiled by the CB-80 or CB-86 compilers have ".COM" in CP/M-80 systems (".CMD" in CP/M-86, ".EXE" in MS-DOS) as the filename extension and can be run without your purchasing the CBASIC Compiler. Programs that were compiled by early versions of the CBASIC Compiler have the extension ".INT" and cannot be run unless you have the CBASIC "run-time" program called CRUN or CRUN2. Both are available from dealers who carry CP/M software.

CBASIC and Other Compiled BASICs

Compiling a program usually means making the program faster and more compact. Most compiled programs can be run from the operating system and are available as ".COM" or ".CMD" files; you need no further information to use them. For the IBM PC the most popular compiled BASIC is Microsoft's BASIC Compiler, also available from IBM. For CP/M computers, the most popular compiled BASIC is CBASIC from Digital Research (supplied with some CP/M computers).

The CBASIC language produces programs that are faster and more compact than those produced with MBASIC and most other BASIC languages. CBASIC programs can be *semi-compiled* (using the CBASIC or CBASIC-86 compiler) or *fully compiled* (using CB-80 or CB-86 compilers). All compilers are available from Digital Research, Inc. (DRI).

Some of the ".COM" or ".CMD" files in the public domain are actually programs written in CBASIC that were fully compiled. The CB-80 compiler produces a ".COM" file which you can run in a CP/M-80 system by typing its name as a command. The CB-86 compiler produces a ".CMD" file which you can run in a CP/M-86 system also by typing its name as a command. You need no further instructions to do this, nor do you need copies of the CBASIC, CBASIC-86, CB-80 or CB-86 compilers.

However, some of the CBASIC programs available in the public domain are *semi-compiled* or in source file form. Semi-compiled programs have the extension ".INT" (such as LEDGER1.INT). To run such a program, you need a version of the CBASIC *run-time* utility, called CRUN or CRUN2 (CRUN2 runs both CBASIC and CBASIC2 programs). This utility is available from DRI by itself, or with the CBASIC compiler. Here's an example of running CRUN2:

```
A>CRUN2 LEDGER1↵
```

You don't have to include the ".INT" extension because CRUN2 assumes the file has that extension.

Many CBASIC programs are available in the *source file* form so that you can modify the programs (you cannot edit ".INT" or ".COM" or ".CMD" files). The source file has the extension ".BAS" (as in LEDGER1.BAS). To run such a program, you must first *compile* the program using the CB-80 or CB-86 compilers, or you must *semi-compile* the program using the CBASIC-80 or CBASIC-86 compilers. Here's an example of the CBASIC compiler (CBAS2 is the name of the CBASIC-80 version 2.0 compiler):

```
A>CBAS2 LEDGER1↵
```

This command produces the semi-compiled program LEDGER1.INT, which can then be run as shown above in the CRUN2 example (CRUN2 is version 2.0 of the CBASIC run-time utility).

Here's an example of using the CB-80 compiler to fully compile a program (CB is the name of the CB-80 compiler):

```
A>CB MYPROG↵
```

This command compiles the program MYPROG.BAS to create MYPROG.COM, which you can then run by typing the name MYPROG by itself on the CP/M command line.

Many public domain CBASIC programs are supplied as both ".BAS" and ".INT" files (such as the complete Osborne/McGraw Hill accounting system, found in CP/MUG volume 43 through 45). You can choose which type of file to use — either the ready-to-run ".INT" file or the ready-to-edit ".BAS" file.

If you choose the ".INT" file you must use the CRUN or CRUN2 utility to run the program. If you choose the ".BAS" file you have two more choices: either the CBASIC-80 or CBASIC-86 compiler to create the ".INT" file to use with the CRUN or CRUN2 utility, or the CB-80 or CB-86 compilers which produce ".COM" or ".CMD" files to run directly from the operating system.

For a detailed guide to CBASIC, try the *CBASIC User's Guide* by Adam Osborne, Gordon Eubanks and Martin McNiff (Osborne/McGraw-Hill). Gordon Eubanks is the author of CBASIC, which evolved from a public domain BASIC he also wrote, called EBASIC.

To get the CBASIC-80, CBASIC-86, CB-80 or CB-86 compilers and associated utilities, contact a software supplier for CP/M computers, or DRI itself (Digital Research, P.O. Box 579, Pacific Grove, CA 93950).

MBASIC, PC BASIC and BASICA

You get two BASIC language "interpreters" with the IBM PC: regular BASIC and Advanced BASIC (BASICA). The differences between the two versions are primarily in the way each handles graphics. The BASIC programs you get from the public domain should work with either BASIC or BASICA.

Both versions of the IBM PC BASIC were developed by Microsoft, whose MBASIC interpreter (also called BASIC-80) is already widely used on CP/M computers, and whose Applesoft BASIC, used on many Apple computers, is remarkably similar. All of these BASICs work in much the same way: you type the name of the BASIC interpreter to start BASIC, then you use the RUN command with the name of the program in quotes (or use LOAD with the program name in quotes, then RUN by itself).

Here's an example of running the program SAMPLE.BAS, using MBASIC (for the IBM PC BASICs, substitute BASIC or BASICA for MBASIC in this example):

```
A>MBASIC ↵
Microsoft BASIC
Version xx.yy
nnnn Bytes Free

Ok
RUN ''SAMPLE'' ↵
```

This should work if SAMPLE.BAS is a proper BASIC program. You can also use this method:

```
Ok
LOAD ''SAMPLE'' ↵

Ok
RUN ↵
```

By using LOAD first before RUN, you are able to load the program into memory and perhaps make changes to it before using RUN. If you make changes to it, be sure to use the SAVE command to save a new copy of it:

```
Ok
SAVE ''NEWPROG.BAS'' ↵
```

Programs supplied in ".BAS" files can be run directly from the operating system if you supply the name of the file along with the command to start the BASIC interpreter. For example, to run NEWPROG.BAS using MBASIC from the CP/M command line, type this:

```
A>MBASIC NEWPROG ↵
```

This MBASIC command performs the RUN command automatically, and assumes NEWPROG has the extension ".BAS" (NEWPROG.BAS). For IBM PC BASIC and BASICA, substitute the command (BASIC or BASICA) for MBASIC in the above example — it works the same way.

Some BASIC programs are supplied as ASCII text files with the extension ".ASC". To run these programs, you *must* use the MERGE command in place of the LOAD command, then use the SAVE command to save the file as a BASIC file (with the ".BAS" extension), then LOAD and RUN the ".BAS" file you created.

Note that the MERGE command simply takes the ".ASC" file contents and merges them with anything that is already *in* memory. Therefore, if you are using MERGE to bring a new program into memory (i.e., you're not trying to merge pieces of a program together, just make an ".ASC" file useful), use the NEW command first, then the MERGE command.

For example, if you downloaded or otherwise received a copy of the public domain program SAMPLE.ASC, you would do the following to create and run SAMPLE.BAS:

```
Ok
NEW ↵

Ok
MERGE ''SAMPLE.ASC'' ↵

Ok
SAVE ''SAMPLE.BAS'' ↵

Ok
LOAD ''SAMPLE'' ↵

Ok
RUN ↵
```

You should keep an archive copy of the ".ASC" file in case you destroy the ".BAS" file.

After using MERGE to load an ".ASC" file, or LOAD to load a ".BAS" file, you can use the LIST command to display the lines of the program, or the LLIST command to print the program:

```
Ok
LIST ↵
      (display all of the program lines.)

Ok LIST 10-100 ↵
      (display only lines 10 through 100.)

Ok LLIST ↵
      (print the entire program.)
```

You now know how to use an ".ASC" file in the public domain, whether you have IBM PC BASIC or BASICA, or Microsoft BASIC for MS-DOS, or MBASIC (BASIC-80) for CP/M systems:

1. Start the BASIC interpreter by typing its name (e.g., BASIC, BASICA, MBASIC, etc.).

2. Use the MERGE command to bring the ".ASC" file (which contains BASIC statements as regular ASCII text) into the BASIC interpreter's memory.

3. Use the SAVE command to save the contents of memory as a regular BASIC program with the filename extension ".BAS".

4. Use the RUN command to run the ".BAS" file, or use LOAD and then RUN.

For more information on using IBM PC BASIC and BASICA, we recommend the IBM manuals for the most accurate information. There seems to be a glut of books about BASIC programming on the IBM PC, and we have not yet settled on which book to recommend. There are numerous sources of information about using the IBM PC.

Programs In Other Languages

The public domain libraries contain programs written in a variety of commercial languages such as the ones mentioned above plus Pascal, Fortran, "C," Forth and others. Some public domain programs are written in languages that are also in the public domain and not available commercially, such as EBASIC (a forerunner to CBASIC), PILOT (very popular among computer-using educators), FIG-Forth (from the Forth Interest Group), PISTOL (evolved from Forth), Tarbell BASIC, Tiny BASIC, Lawrence Livermore BASIC and SAM76 to name a few.

The SIG/M library contains several volumes of programs written in the Pascal/Z language for CP/M-80 systems. To run these programs, you need the Pascal/Z compiler from Ithaca Intersystems (Ithaca Intersystems, 1650 Hanshaw Rd., Ithaca, NY 14850). The Pascal/Z users' group may be of some help: Pascal/Z Users Group, 7962 Center Parkway, Sacramento, CA 95823.

There are also a large number of programs written in the "C" language from BD Software called BDS-C. The source files (with the ".C" extension) can be edited using any text editing or word processing program, then compiled with the BDS-C compiler, which is very popular among programmers. The BDS-C compiler is available for $150 (contact Leor Zolman, BD Software, P.O. Box 9, Brighton, MA 02135, phone 617-782-0836).

The IBM PC public domain libraries contain many programs written in PC BASIC (which is supplied with the IBM PC), and some others written in Pascal and Fortran (available from IBM or Microsoft). MVP Forth (Mt. View Press Forth) is available in the public domain. Ladybug, a user-supported program (contribution asked), is a graphics programming language for the IBM PC (PC-DOS) that resembles the Turtle Graphics of the LOGO language, which is a very easy-to-learn language now gaining popularity (it was first used by educators, then by game designers).

To learn how to run programs written in any of these languages, you have to consult the manuals or ".DOC" files associated with the language. There is not enough space in this book to describe each language in detail. Generally, a program that is not supplied as a ".COM" (or ".CMD" or ".EXE" or ".BAT") file has to be "prepared for execution" by either *compiling* it or *interpreting* it. Therefore, you need a compiler, interpreter or similar utility, which is either available in a public domain volume or is sold by a commercial dealer.

Now You're Ready

You now have almost everything you need to go out into the public domain and dig for gems. You should first browse through the public domain catalogs. You can order disks for your IBM PC or eight-inch disk system running CP/M, or perhaps for your Osborne, Kaypro, Morrow or other computer, using the ordering information and catalogs.

The next step in your learning about public domain software is library files and squeezing/unsqueezing utilities. In the next issue you'll learn how to unsqueeze the public domain files and extract them from library files. One or both steps are necessary for many of the software packages in the public domain.

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Checks & Balances

An excellent program for maintaining your personal checking account.

by Tony Bove & Cheryl Rhodes

***Checks & Balances** is from CDE Software, 2463 McCready Ave., Los Angeles, CA 90030 (213-661-2031) and costs $74.95 (including check printing and the "Rolodex" data base). The program runs on any CP/M (version 2.2) or MS-DOS computer including the IBM PC (PC-DOS); the CP/M version requires 56K of RAM, and the MS-DOS/PC-DOS version requires 256K.*

Checks & Balances is an excellent home budget management tool that balances your checkbook, keeps track of all types of expenses, and prints detailed reports for you and your tax preparer.

Home computers were once derided for only being able to balance your checkbook, and not do it any better than a calculator, pencil and paper. With Checks & Balances you can handle your check-writing and balancing chores a lot easier and quicker than using paper, a pencil, and a calculator. Using the program can also make you a better manager of your household affairs and business expenses.

Checks & Balances (C&B) was not designed to run a business other than a professional business. It was designed specifically for home budgeting and checkbook reconciliation. It does not present the information in the form of a general ledger, and it does not do accounts receivable or other business bookkeeping functions like payroll. However, if you run a professional business with no employees, and you handle your accounts receivable without a computer, you can use C&B to manage your bookkeeping tasks.

You can enter checks, bills to be paid, miscellaneous withdrawals, interest payments or credits, or any other transactions in the data entry mode. You can go back and change any transaction — C&B changes your totals automatically.

C&B can present all your bills for easy payment, and all your uncleared transactions for checking against your bank's monthly statement. C&B does check printing as an option, and can automatically merge names and addresses from a "Rolodex"-type data base to print on the checks. C&B's "Rolodex" data base is also a general purpose data base for storing names, addresses, phone numbers, account numbers and miscellaneous information.

Perhaps the best way to evaluate Checks & Balances is to lead you through the process of installing and starting to use it. You can then know whether or not Checks & Balances fits your situation.

Installation

C&B, written and compiled in PL/I, is a large program with many *overlay files* (files with the extension ".OVL" in the CP/M version, ".OVR" in the PC-DOS and MS-DOS versions). Each overlay file contains a part of the program that performs a specific function.

The main part of the program is CHECKS.COM in the CP/M version and CHECKS.EXE in the MS-DOS version, which you start by typing `CHECKS` ↵ (or `B:CHECKS` ↵ or from another drive). When it loads into memory, it reserves a space for one of these overlay files. As you select a C&B function, CHECKS loads the appropriate overlay file into memory.

The reason for this organization is that C&B, with all its functions, would occupy over 200K of the computer's internal RAM (random-access memory). Most CP/M users have 64K RAM or less, and many PC-DOS and MS-DOS users have 256K (which holds the program but leaves little room for data). With this overlay organization, the CP/M version of C&B can be used with systems that have as little as 56K. The PC-DOS/MS-DOS version requires 256K.

As for disks, C&B completely fills one 8" single-density disk (CP/M standard format), which is 253K. If you have enough room on drive A for all of the ".OVL" or ".OVR" files, the CBHELP.DAT help file and the CHECK.COM or CHECK.EXE file, you can put the rest of the demo data files and your own data files on another drive.

If you have enough room for the ".OVL" or ".OVR" files but not

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enough for anything else, you can put CHECK.COM or CHECK.EXE on drive B and leave out the CBHELP.DAT file, which contains help messages and a command summary. You would then have to rely on the manual for help and a command summary, but the program runs without fail. We tested this situation on an Osborne 1 computer with two double-density drives each holding 180K. C&B worked without any problems.

The C&B user's manual clearly states how to set up your two or three disks in the following situations: (1) two disks with over 250K per disk, (2) two disks with 220K to 250K per disk, and (3) three disks with less than 220K per disk. These configurations work without fail. We tested situation 3 on the Osborne (which lets you keep CBHELP.DAT available), and situation 2 on the Osborne (without CBHELP.DAT). The program is much faster with situation 1, which we tested on our dual-drive Alspa computer.

Checks & Balances is a marvelous program that balances your checkbook with the ease and grace of a programmed spreadsheet that is ready to use.

The minimum requirement for C&B is two disk drives with at least 160K in each drive. The program has provisions for changing disks during operations like sorting (in which disk space is used for temporary storage).

You can leave out some C&B functions if you don't need them, such as the check printing function and the help function, by leaving out the corresponding ".OVL" or ".OVR" files. The C&B manual states clearly which ones you can delete and which ones you must keep.

When you start the program, it first checks to see if you configured it for your terminal (the pre-configured version for the IBM PC skips this step).

```
=========== CHECKS & BALANCES Configuration Program ===========

  1. Select terminal type
  2. Alter present terminal configuration
  3. Alter present function key assignments
  4. Select printer type
  5. Alter present printer configuration
  6. Installation complete - begin running CHECKS & BALANCES
  7. Abort installation and exit to system

Please make your selection:
```

Figure 1. *Checks & Balances configuration menu, which lets you select or define your terminal type, alter the control codes, change the function key assignments, and select or define your printer type.*

```
*** CHECKS & BALANCES ver 3.1 ***  Use HELP or see manual for more information
BALANCE - Check off items which have cleared the bank
  BILLS - Display only bills for paying or examining
 BUDGET [key]- Set up and display budget for the 64 main categories
 CONFIG - Alter terminal or printer configuration
  ENTER - Enter new transactions, or add breakdowns to existing entries
   INIT - Define categories, name, starting balance and next check number
  MONTH [months] - Define period for displays and listings (months / quarters)
  NAMES [NAMEFILE file][{WITH} name] - ROLODEX for names, phone no's, notes
   OPEN - Open a different file
  PRINT - Print complete file by number
  PRINT [options] - Options are: FROM nnnnnn, TO nnnnnn, WITH 'string',
          DEP, BILLS, MISC, OTHER, any keys, KEY keys, KEY=keys, NOBREAK
          (See manual or use HELP OPTIONS for additional information on options)
   SHOW [options] - Display transactions on the screen for viewing and editing
   SORT - Sort the file into proper numerical order
    SUM [NOIE][keys] - Print summary totals of categories and expense report
  TOTAL - Display totals with item count. See manual or HELP for options
CHECK PRINTING - Use CHECKS to print, SETUP defines form, NAMES for addresses
Press TAB or ESCAPE to go to or from DATA area and COMMAND line. At anytime, use
Control-P to print the screen. Always use BYE to exit, never reset your computer
12/15/84  Period covers entire year
File=DEMO       CHECKS & BALANCES  TRUE $    8986.33 BANK $    8986.33
--------------------------------------------------------------------------------
```

Figure 2. *After typing the filename of the checkbook register, Checks & Balances displays a summary of its commands.*

```
#MISC    01/01/84 Pay To: GAS                                  $     23.00.
            <U    >  Memo: CASH PAID FOR GAS FOR CAR                     >

#MISC    03/03/84 Pay To: C.D.E. SOFTWARE                      $     52.00
            <COMP>  Memo: CHECKS & BALANCES                             >

#MISC    12/14/84 Pay To: Peninsula Office supplies            $     18.65
            <COMP>  Memo: floppy disks -- cash paid                     >

#DEP     12/14/84 Pay To: Deposit into Checking Account        $    400.00 X
            <DEP >  Memo: Dec 1st half paycheck                         >

#OTHER   01/04/84 Pay To: BANK                                 $      3.00 X
            <SRCH>  Memo: monthly service charge                        >

#OTHER   03/03/84 Pay To: CASH WITHDRAWAL                      $     60.00 X
            <    >  Memo:                                               >

#OTHER   12/14/84 Pay To: cash withdrawal from auto teller     $    100.00 X
            <    >  Memo: Palo Alto branch                              >

12/15/84  Period covers entire year
File=DEMO       DISPLAY and EDIT   TRUE $    8986.33 BANK $    8986.33
--------------------------------------------------------------------------------
```

Figure 3. *Checks & Balances can SHOW your checkbook register on your screen.*

C&B is one of the easiest programs to configure if your terminal is one of the eighteen brands listed. We picked "TeleVideo" from the list and it worked with both our TeleVideo Model 950 and with the Osborne 1.

If your terminal is not one of the brands listed, you can enter your terminal control codes by following the description in the manual and selecting item 2 from the menu (figure 1). The menu lets you select to alter the printer configuration and to change the function key assignments.

To configure the function keys, the configuration program asks you to press the appropriate key for each function. The cursor movement keys can be changed in CP/M, but they are usually set to the control codes corresponding to the arrow keys for your terminal keyboard (or Control key sequences).

The *scroll key* in CP/M is a function key that scrolls the display down — it is usually Control-S unless you change it to something else. To move back and forth from the data area and the C&B command line, you use your ESCape key or TAB key (the Home key also does this in PC/MS-DOS).

C&B is easy to configure even if you make mistakes. If you get garbage on your screen, you can return to the configuration menu by pressing Return, or you can type the CONFIG command at any time to change your configuration.

First Impressions

C&B starts quickly and displays messages telling you what it is doing. Our first impressions were favorable because it responded quickly, allowed us to peruse its features using demonstration data, and presented readily-understood displays — a check register with check numbers, memos, amounts, and income/expense categories.

C&B first asks for a filename. This is the name of the checkbook account. You should use a different file for each bank account, and a different file for each year. This makes it simple for you to manage your accounts, but if you have several, you will still be faced with the non-trivial task of printing separate reports for each account and combining the information into one report for tax purposes.

C&B lets you have up to 64 categories that can be defined with or without budgeted amounts. These categories are calculated when you use the TOTAL or SUM commands. You can also have any number of undefined categories which you can display and summarize.

One outstanding feature of C&B is the ability to change anything, anytime, without destroying or putting out of balance your electronic checkbook register. You can even go back and change the starting balance, so if you want to start using C&B but you don't know your starting balance, you can guess it or make it zero until you find out the actual balance, then change it.

Before setting up your own check register and categories, you should walk through the C&B operations with the DEMO data. Type the filename DEMO↵ (or B:DEMO↵). C&B presents a command summary that fills the screen, and puts the cursor on the bottom line of the screen (figure 2). If you type SHOW↵ the program displays a check register that looks like a check register (figure 3).

SHOW displays the register and also lets you edit it. You can press your ESCape key to move the cursor into the register, and move across fields with the cursor movement keys. You can change entries by typing over them. Press ESCape to get back to the command line, and C&B automatically saves your changes.

C&B displays two balances at the bottom of your screen: the "bank" balance and the "true" balance. The "true" balance changes as you type new transactions and make changes to your electronic checkbook register. The "bank" balance changes as you check off transactions while comparing them to the monthly statement you get from your bank. It is very useful to have both balances, so that you can know at a glance if checks or deposits have not cleared.

To enter new transactions, type the ENTER command and press Return. The screen should look like figure 4, ready for you to fill in the blanks.

ENTER puts you at the end of your checkbook register to enter new transactions. You can type any kind of transaction without worrying about its position in the register, because C&B also has a SORT command for sorting the register.

C&B extends its outstanding feature to all transactions — you can change any transaction in the register by typing over the old data. You can then use the TOTAL command to recalculate your category totals. Both the "true" and the "bank" balances are recalculated automatically.

To move around from field to field in the register, you use your cursor

```
AUTO =E-AUTO REPAIRS                        T    =E-TRAVEL EXPENSES
COMP =E-COMPUTER SUPPLIES                   U    =E-UTILITY BILLS
CC   =E-CREDIT CARD PAYMENTS                DEP  =I-DEPOSITS INTO ACCOUNT
INT  =E-INTEREST PAID                       DEPI =I-INTEREST EARNED & DEPOSITED
MED  =E-MEDICAL & DENTAL EXPENSES           ZZZZ =Z-topic        11
PHON =E-TELEPHONE BILLS                     ZZZZ =Z-topic        12
Check #1-999990, DELETE=999999 or DEP BILL OTHER MISC PRINT. NEXT=      132
==========================================================================
#   131 12/14/84 Pay To: Pac Tel                                $     55.00 X
  Main KEY <PHON>  Memo: November calls                                 >
           <T   >        <from Las Vegas Comdex show              > $     12.00
           <ZZZZ>        <TUG Inc. calls                          > $     38.00
           <    >        <                                        > $      0.00
           <    >        <                                        > $      0.00

#     0 00/00/00 Pay To:                                            $      0.00
  Main KEY <    >  Memo:                                                      >
           <    >        <                                        > $      0.00
           <    >        <                                        > $      0.00
           <    >        <                                        > $      0.00
           <    >        <                                        > $      0.00
12/15/84  Period covers entire year
File=DEMO       ENTER NEW DATA     TRUE $    8986.33 BANK $    8986.33
--------------------------------------------------------------------------
```

Figure 4. *Checks & Balances: using ENTER to enter a new checkbook transaction. C&B keeps the updated balances on the screen, as well as a menu of categories.*

movement keys as you defined them during installation. We installed C&B for several different terminals including an Osborne 1 computer; we had no trouble defining and using our cursor movement keys with C&B.

Overall we found C&B to be a remarkably easy-to-use checkbook balancing program that can help you prepare your personal or professional income tax.

Entering Data

When entering a check, you can type any check number or press Return to get the next number in sequence. To enter other types of transactions, you type one of the following words:

`BILL` For entering a bill you just received. Bills are not added into category totals or subtracted from the balance until you pay them. You can use the BILLS command to pay them quickly and easily.

`DEP` For a deposit. The word `DEP` is inserted automatically into the category and `PAY TO` fields, and you can change them by typing over them (you may want to change the category from the general `DEP` to a more specific one you defined).

`MISC` For a transaction you want to include in the category totals, but not affect your bank balance. This is the typical entry for cash outlays that need to be recorded.

`OTHER` For other actions that affect your bank balance, such as service charges and cash withdrawals from the bank account.

`PRINT` For checks to be printed by C&B. The transaction is a regular check except that the check number is not assigned until the check is printed by C&B. If you decide to write the check by hand, simply type a check number over the word `PRINT`.

In the date field for a bill you put the date the bill is due; otherwise, you put the date of the transaction. You can type a date or press Return to get the date you typed at the start of the program.

The amount field accepts numbers up to `9999999.99`. You can type the amount without a decimal point if there is no decimal in the number.

Following the amount field, at the right edge of your screen, is a single-spaced field called the "cleared field". You leave this field blank (type a Return if it is already blank, or type a blank and then a Return), until the time comes to check off the transaction when it shows up on your monthly bank statement.

C&B's method of balancing the electronic checkbook is very easy to use. You go down the electronic list and check off entries by typing any non-blank character in this field. The "bank balance" at the bottom of your screen changes as you check off items. This is similar to what you do with a paper checkbook, but the balance is calculated for you.

In the "main key" field you put the category name that corresponds to all or some of the amount of the transaction. After this is a "memo" field that can hold up to 40 characters. Note that some checkbook balancing and general ledger programs leave much less space for memos, yet the memos are important in an audit.

There is room to add more "keys" (category names) for other categories, so that you can distribute one check's amount over several categories. C&B automatically checks to see if the distributed amounts add up to the total for the check, and if they don't, C&B displays the difference with a warning. Where other programs would force you to make your distributed entries equal the total, the C&B makers recognized that people may want to distribute some but not all of a check's amount, or they may want to add to their category totals.

You are allowed up to four additional categories, but if you need more, you can enter another check with the same check number and a zero amount, filling in additional memos and categories.

How does this compare to other programs? Many of them require you to break up a check into separate transactions for each category, using the same check number the transactions. This is a valid way to do it, but C&B offers more flexibility.

Another excellent feature of this program is its ability to print whatever you see on the screen with a single keystroke command: Control-`P`. You could print a segment of your checkbook, or the result of a SHOW command, or any other screen of data that C&B can generate.

Retrieving Data

The SHOW command displays your checkbook register. SHOW by itself displays the entire register screen by screen (use your scrolling key to see each screen). You can print any screen image with Control-`P`.

You can also display pertinent data using options with the SHOW command such as `DEP`, `BILLS`, `MISC`, or `OTHER` to display only deposits, bills, miscellaneous transactions or other transactions, respectively. If you use SHOW with a check number, C&B displays the part of register that starts with that check. If you use SHOW with a category key, C&B shows only the transactions associated with that category.

You can also use SHOW to display transactions associated with undefined categories. You can even use SHOW to search for the transactions that have a certain word in their "memo" or "pay to" fields. For example, you could type the command `SHOW Joe` to see all transactions with the word "Joe" in the "memo" or "pay to" fields.

The TOTAL command presents six screens of information. The first four are totals for each defined category, with period totals (usually monthly) and year-to-date totals (figure 5). The last two are the income/expense summary (figure 6) and totals for each month (figure 7).

```
                    ***** PERIOD and YEARLY CATEGORY TOTALS *****
---- PERIOD ---- ---- YEARLY ----
 CNT        TOTAL  CNT        TOTAL  KEY    TYPE and DESCRIPTION
==== =========== ==== =========== ====   ====================================
   0         0.00    2      422.32  AUTO = E-AUTO REPAIRS
   1        18.65    2       70.65  COMP = E-COMPUTER SUPPLIES
   1        20.00    2      120.00  CC   = E-CREDIT CARD PAYMENTS
   1       100.00    2      110.32  INT  = E-INTEREST PAID
   1        40.00    2       53.20  MED  = E-MEDICAL & DENTAL EXPENSES
   1        55.00    2       87.40  PHON = E-TELEPHONE BILLS
   1        12.00    1       12.00  T    = E-TRAVEL EXPENSES
   1       329.57    3      358.35  U    = E-UTILITY BILLS
   1       400.00    1      400.00  DEP  = I-DEPOSITS INTO ACCOUNT
   0         0.00    0        0.00  DEPI = I-INTEREST EARNED & DEPOSITED
   0         0.00    0        0.00  ZZZZ = Z-topic        11
   0         0.00    0        0.00  ZZZZ = Z-topic        12
   0         0.00    0        0.00  ZZZZ = Z-topic        13
   0         0.00    0        0.00  ZZZZ = Z-topic        14
   0         0.00    0        0.00  ZZZZ = Z-topic        15
   1        38.00    1       38.00  ZZZZ = Z-topic        16

12/15/84  Period covers December
File=DEMO        * CATEGORY TOTALS *TRUE $     8986.33 BANK $     8986.33
--------------------------------------------------------------------------------
```

Figure 5. *Checks & Balances: the TOTAL command presents six screens of information which you can print. The first four screens shows totals of defined categories.*

```
--------------------------------------------------------------------------------
                 ------------- INCOME/EXPENSE SUMMARY -------------
        ---- INCOME ----  --- EXPENSES ---  -- MONTH END ---    ENDING BALANCE
======  ================  ================  ================   ================
                                            Starting Balance       10000.00
Jan       0        0.00    2       -16.20    2       -16.20        9983.80
Feb       0        0.00    2       -38.18    2       -38.18        9945.62
March     0        0.00    2      -192.40    2      -192.40        9753.22
April     0        0.00    0         0.00    0         0.00        9753.22
May       0        0.00    1      -132.00    1      -132.00        9621.22
June      0        0.00    2      -390.32    2      -390.32        9230.90
July      0        0.00    0         0.00    0         0.00        9230.90
Aug       0        0.00    0         0.00    0         0.00        9230.90
Sept      0        0.00    0         0.00    0         0.00        9230.90
Oct       0        0.00    0         0.00    0         0.00        9230.90
Nov       0        0.00    0         0.00    0         0.00        9230.90
Dec       1      400.00    6      -644.57    7      -244.57        8986.33
        ----------------  ----------------  ----------------   ============
          1      400.00   15     -1413.67   16     -1013.67        8986.33

12/15/84  Period covers December
File=DEMO        * CATEGORY TOTALS *TRUE $     8986.33 BANK $     8986.33
--------------------------------------------------------------------------------
```

Figure 6. *Checks & Balances: the TOTAL command's fifth screen is a monthly income/expense summary.*

```
--------------------------------------------------------------------------------
            ========= Miscellaneous Monthly Totals =========
                          ----------- OUTSTANDING ---------
              BILLS          CHECKS & OTHER        DEPOSITS
          ================  ================  ================
Jan       0        0.00    0         0.00    0         0.00
Feb       0        0.00    0         0.00    0         0.00
March     0        0.00    0         0.00    0         0.00
April     0        0.00    0         0.00    0         0.00
May       0        0.00    0         0.00    0         0.00
June      0        0.00    0         0.00    0         0.00
July      0        0.00    0         0.00    0         0.00
Aug       0        0.00    0         0.00    0         0.00
Sept      0        0.00    0         0.00    0         0.00
Oct       0        0.00    0         0.00    0         0.00
Nov       0        0.00    0         0.00    0         0.00
Dec       0        0.00    0         0.00    0         0.00
          ----------------  ----------------  ----------------
          0        0.00    0         0.00    0         0.00
                                Total outstanding amount          0.00
                                 PLUS bank ledger balance      8986.33
                              Yields TRUE checkbook balance    8986.33
12/15/84  Period covers December
File=DEMO        * CATEGORY TOTALS *TRUE $     8986.33 BANK $     8986.33
--------------------------------------------------------------------------------
```

Figure 7. *Checks & Balances: the TOTAL command's last screen is a monthly summary of bills, checks and other transactions, and deposits.*

For printing detailed reports, you can use the SUM and PRINT commands. The SUM command produces the income/expense report and monthly category summaries, and also summarizes undefined categories. PRINT can print the entire register or selected transactions based on category key, check number, or word in the "memo" or "pay to" fields (same as SHOW).

Reports can be printed with 80 columns, 132 columns, or 132 columns with compressed printing (if the printer configuration is set properly for your printer — you can go to the CONFIG menu at any time while running C&B). You can print a monthly summary of individual categories by specifying each key, or print the entire register in numerical order according to the main key of each transaction.

Paying Bills and Balancing the Checkbook

Both are painless operations. To pay bills you type the BILLS command, and C&B displays a list of the bills you've already typed in. You pay each bill by typing over the word BILL with a check number (for a hand-written check) or the word PRINT (to queue the check for printing).

C&B displays the true balance immediately so that you can see if you are overdrawn or in trouble; if you are, you can change the transaction back to being an unpaid bill. You can also skip bills by moving to the next one with your cursor control key.

To balance your electronic checkbook, type the command BALANCE, and with your bank's monthly statement in hand, go down the display of uncleared items and check off the cleared ones by typing any non-space character.

As you clear an item, your bank balance is recalculated automatically. When the displayed "bank" balance does not match the "true" balance, you have uncleared amounts or an OTHER which should be a MISC. If the "bank" balance on the screen doesn't match your bank's monthly statement, check for incorrect amounts in your entries or the bank's statement.

Check Printing and an Electronic "Rolodex"

The Check Writer and "Rolodex" functions are optional features that work together to make it easy for you to print multiple checks. You can configure the program to print checks according to specified column positions, or copy the configurations for various check forms from CHECKS-TO-GO.

The "Rolodex" data base lets you enter name and address data to use when printing checks. It also serves as a general-purpose "Rolodex" (name and address card file). Figure 8 shows a "Rolodex" record.

When you select checks to print, C&B tries to match the name in the PAY TO field with the cross reference names in the "Rolodex" data base. If it finds the name it prints the PAYEE name from the "Rolodex" in the printed check's PAY TO field, and prints the address on the check for use in window envelopes.

We did not use the check printing features extensively, but C&B is a useful program with or without them. The "Rolodex" is handy by itself, and you can print any "Rolodex" record with a Control-P. You can retrieve a record with a specific name, or all records with a common name. You can maintain several "Rolodex" files using different filenames.

```
Cross Ref. Name #1 <C.D.E. SOFTWARE                          >
Cross Ref. Name #2 <CDE                                      >

             PAYEE <C.D.E. Software                          >
     Address Line 1 <Patrick Lajko / President               >
             Line 2 <2463 McCready Avenue                    >
             Line 3 <Los Angeles, California                 >
             Line 4 <              90039                     >

     Account Number <                          >        Payee ID <          >

           Phone #1 (213)-661-2031 Ext:
           Phone #2 (   )-   -     Ext:

========== Your Own MEMOs - These are NOT Printed on Check or Stub ===========
            Memo #1 <Creators of CHECKS & BALANCES.  Call for distributor,  >
                 #2 <dealer & bundling information for CP/M & MS-DOS program>
                 #3 <~~~  Return warranty card for updates and support.  ~~~>
         1 Current Name
         1 Names are on file C&BNAMES
12/15/84  Period covers the entire year                                    .
File=DEMO        EDITING NAMES      TRUE $    8986.33 BANK $    8986.33
-------------------------------------------------------------------------------
```

Figure 8. *Checks & Balances: the optional "Rolodex" general-purpose data base program for use with check printing or by itself.*

```
                 ***** MONTHLY BUDGET by CHECKS & BALANCES *****
Category code "AUTO" = AUTO REPAIRS
   Category type "E" = Expense Account
                      BUDGET        ACTUAL    DIFFERENCE        STATUS
                  ------------  ------------  ------------  ----------------
    January             0.00          0.00          0.00
   February           200.00          0.00        200.00
      March           200.00          0.00        200.00
      April           200.00          0.00        200.00
        May           200.00        132.00         68.00       34% under
       June           200.00        290.32        -90.32       45% OVER
       July           200.00          0.00        200.00
     August           200.00          0.00        200.00
  September           200.00          0.00        200.00
    October           200.00          0.00        200.00
   November           200.00          0.00        200.00
   December           200.00          0.00        200.00
                  ============  ============  ============
     TOTALS          2200.00        422.32       1777.68

          As of today, this category is roughly       80% under budget.
12/15/84  Period covers the entire year
File=DEMO        BUDGET             TRUE $    8986.33 BANK $    8986.33
-------------------------------------------------------------------------------
```

Figure 9. *You can set up monthly budgets for up to 64 defined categories. Here are the monthly budget amounts for the first category.*

Budgeting

You can set up monthly budgets for up to 64 defined categories. The command BUDGET produces a display of monthly amounts of your first category (figure 9). You can move to the next category with your scroll key.

You can fill in the budget amounts, but you can't change the actual totals — they are calculated automatically from transactions in your register. As you are entering budget amounts, if you want to repeat the same amount for many months, type the amount in one month and press Return, then press Return for the next month to repeat that amount, and so on.

Conclusion

Checks & Balances is a well-designed program for maintaining a checking account. The features adapt well to the IBM PC function keys, and you can configure any terminal's function keys to work with it, as well as any printer.

This program does not lock you into a specific way of recording information. You have the flexibility to enter transactions as you would enter them on a paper checkbook register. What's more important is the ease with which you can change any transaction or entry, change or add categories, or even change the starting bank balance, and C&B recalculates the balance for you.

The reports are complete and understandable. The program lets you print reports in 80 columns, 132 columns (wide paper), or 132 columns with compressed print.

Data retrieval on the screen is fast and flexible. You can display or report on any category or set of categories. You can display or report on any transactions containing a certain word in the "memo" or "pay to" fields (e.g., search for all checks written to "Joe"). To top it off, you can print anything you see on the screen, instantly, by pressing Control-P (or function key F7 on the IBM PC).

All in all, Checks & Balances is a marvelous program, especially for newcomers to computing who want to get the feel of a home computer without using expensive business programs or learning to write in BASIC. It balances your checkbook — something a computer was always supposed to be able to do — with the ease and grace of a programmed spreadsheet that is ready to use.

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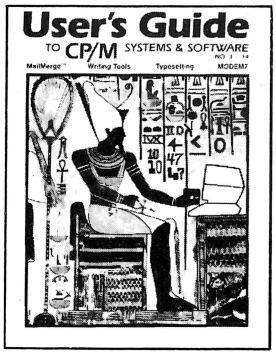

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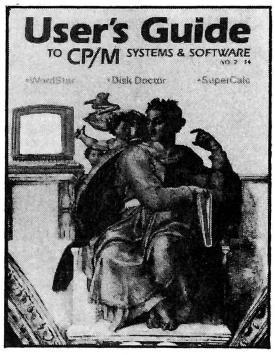

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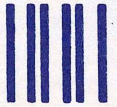

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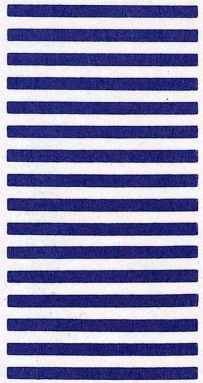

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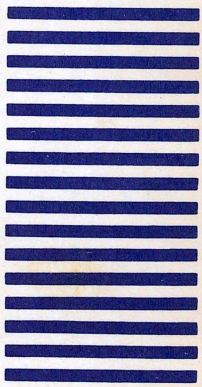

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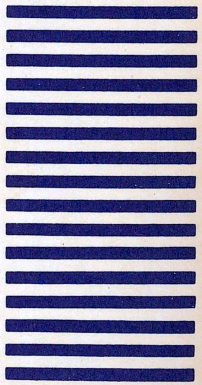

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Squeezing and Un-squeezing Files

Free software for CP/M and MS-DOS/PC-DOS computers is usually stored in files that are squeezed to save space. You have to un-squeeze these files in order to use them. You may also want to learn how to squeeze your own files and save disk space.

by Tony Bove & Cheryl Rhodes

Free software may not be easy to obtain. The tutorials on public domain software, Modem7, and calling bulletin board systems (issue #11/12 of *User's Guide*) explains how to get the software, but even if you have the right files, you may not be able to use them without first "un-squeezing" them. The files in the public domain libraries are "squeezed" into a smaller size so that they occupy less disk space and take less time to transmit.

The squeezed files prepared by public domain librarians always have a "Q" as the middle letter of the filename extension; for example, the squeezed version of PROGRAM.DOC is PROGRAM.DQC.

Any file can be squeezed (except a file that is already squeezed); however, squeezed text files cannot be displayed with the regular TYPE command. Most bulletin board systems have an enhanced TYPE command that can display a squeezed file; or there might be a program called TYPESQ, TYPE21 or TYPEL that will do it.

You can download a squeezed file, and copy it from disk to disk, but you can't do much else with it until you "un-squeeze" it. There are many utility programs that can un-squeeze files including USQ and NSWEEP (NSWP205).

Un-squeezing may not be the only thing you have to do to get public domain programs. Many programs reside in library files — files with the ".LBR" extension. In these cases you have to *extract* the file from the library, and *also* un-squeeze it if it is a squeezed file. The LSWEEP13 and NULU utilities, both described in detail in a related tutorial in this issue, extract and also un-squeeze files.

What do you do when you encounter squeezed files, in or out of libraries? Follow these steps:

1. Copy or download the entire library or the specific file to your disk (see issue #11/12 for information). Make a copy of the file or library and store it in your disk archive.

2. Check your disk for enough space, or move the squeezed file or library of squeezed files to a new disk for un-squeezing. You must have enough disk space to hold a new un-squeezed file for every squeezed file; an un-squeezed file could be one-and-a-half times as big as the squeezed file. If you have a library of squeezed files, multiply the library size by two to get an idea of how much space you need.

3. Use a utility like USQ or NSWEEP (NSWP205 or newer version) to un-squeeze the files. If the files are in a library, use LSWEEP (LSWEEP13 is the best as of this writing) or NULU — both are described in a related tutorial on library files.

The latest version of USQ can un-squeeze many files at once. NSWEEP is a larger program that can un-squeeze many files and perform other file maintenance. LSWEEP and NULU are designed to extract squeezed or regular files from a library file.

You have to know how to un-squeeze files and extract files from libraries in order to use anything in the public domain. The first two utilities you should get from a user group or download from a BBS (bulletin board system) should be NULU, LSWEEP13 or LU300 to extract those files residing in library files, and USQ or NSWP205, so that you can un-squeeze files that are *not* in library files.

Always un-squeeze files on your own disks. Never un-squeeze files on a BBS disk because you will be wasting valuable time and using up the BBS's disk space.

Squeezed versions of files take up less space depending on the content of the original file. For example, ".CQM" or ".OQJ" files are not significantly smaller than their original ".COM" and ".OBJ" counterparts. However, text files and program source code files (which are usually text) can be squeezed to between 65% and 52% of their original sizes.

You don't have to squeeze files unless you intend to squeeze your own data files or text files. You may want to squeeze files before copying them to archive disks or transmitting them to other computers. This tutorial not only covers un-squeezing in detail; it also explains how to squeeze files and use all the utilities that deal with squeezed files.

Un-squeezing Utilities

NSWP205 (NSWEEP version 2.05, written by Dave Rand) is designed to "sweep" through a directory of files and perform operations to a set of "tagged" files. The NSWEEP menu is shown in figure 1 (NSWEEP is described fully in issue #10). The program can replace most of the functions of PIP, STAT, ERA and REN, as well as perform squeezing and un-squeezing. However, the program cannot (as of this writing) extract files from library files or display the filenames of member files in library files (see tutorial on library files).

LSWEEP13 (LSWEEP version 1.3, written by Joe Volger) is designed to extract squeezed or un-squeezed files from library files. LSWEEP un-squeezes as it extracts squeezed files, so by itself LSWEEP is sufficient for obtaining programs from public domain library files. However, LSWEEP does not check the extractions to see if they're exactly the same as the versions originally stored in the library file. It is possible to have errors in transmission "corrupt" a member of a library file; in such cases you need NULU or LU to extract the member.

NULU is preferable to LSWEEP because it gives you a choice whether or not to un-squeeze a file while extracting it from a library. If you have limited space on your disk, you might not want to un-squeeze everything you extract. NULU is described in the tutorial on library files.

There may be other un-squeezing utilities now available, but the original "squeezer" utilities, and USQ, the granddaddy of un-squeezers, is the smallest and most trustworthy utility for un-squeezing.

```
                NSWEEP  -  Version 2.05   04/11/1984
                     (c) Dave Rand, 1983, 1984
                        Edmonton, Alberta

A - Retag files          ¦ Q - Squeeze/Unsqueeze tagged files
B - Back one file        ¦ R - Rename file(s)
C - Copy file            ¦ S - Check remaining space
D - Delete file          ¦ T - Tag file for transfer
E - Erase T/U files      ¦ U - Untag file
F - Find file            ¦ V - View file
L - Log new disk/user    ¦ W - Wildcard tag of files
M - Mass file copy       ¦ Y - Set file status.
P - Print file           ¦ ? - Display this help
X - Exit to CP/M         ¦ cr, sp - Forward one file
363K in   34 files.   27K free.
 Tagged files =    OK (    OK).

                1. CO: BAUDM    .COM  2K :
```

Figure 1. *NSWEEP version 2.05, which can replace most of the functions of PIP, STAT, ERA and REN, as well as perform squeezing and un-squeezing.*

The SQ/TYPESQ/USQ Utilities

The "squeezer" utility, SQ version 1.3, was designed by Dick Greenlaw to compress CP/M files so that they take up less disk space and less time to transfer. However, the files cannot be used for their intended purpose while in squeezed format — you must un-squeeze them first. USQ (also written by Dick Greenlaw) was the first utility designed to un-squeeze files.

TYPESQ, written by Bob Mathias, lets you display the contents of a squeezed text file. This utility was incorporated into other utilities like TYPE21, which lets you display squeezed or un-squeezed files. (These utilities cannot be renamed to TYPE in normal CP/M systems because CP/M has a built-in TYPE command that does not display squeezed files. However, some bulletin board systems replaced the built-in TYPE command with TYPE21 or similar utility.)

The original SQ and USQ utilities were written in the C language (BDS-C Compiler, available from Leor Zolman, BD Software, P.O. Box 9, Brighton, MA 02135). The "source code" files (containing text in the C language) can be obtained if you want to customize your versions of SQ and USQ. The newest versions of SQ and USQ are faster because they are written in assembly language (by Jim Lopushinsky).

FLS (version 1.1), also written by Dick Greenlaw, is a program that works on the same command line with the original SQ or USQ program to let you expand an ambiguous filename (a match for several filenames using the CP/M * and ? "wildcard" symbols) into a list of filenames. With FLS you can squeeze or un-squeeze a list of files rather than one file at a time. The newest versions of SQ and USQ can handle a wildcard filename on the same command line without FLS.

Un-squeezing With USQ

The original USQ program (we describe version 1.4 here) expands squeezed files into exact duplicates of their originals. USQ can also provide a quick, un-squeezed display of the beginning of a squeezed file.

You can provide filenames, drive letters and options for USQ on the same command line with USQ, or in response to USQ prompts. You can also provide them from a file you already saved with the information.

Before un-squeezing, be sure you have enough space on disk to fit another file nearly twice the size of the squeezed file. If you don't have enough space, see the second example below.

Here's an example of the USQ utility un-squeezing one file on the same drive:

```
A>USQ MDM740.DQC ↵
```

(The ↵ symbol stands for the Return key; `this typeface` is what you type, and this typeface is what is displayed.)

USQ creates an un-squeezed file using the name the original file had when it was squeezed. All squeezed files carry their original names with them, so that un-squeezing utilities can re-create the same file using that name.

To put the un-squeezed file on a disk other than the one holding the squeezed file, specify the "destination disk drive" first (the one to hold the new un-squeezed file), then the filename of the squeezed file:

```
A>USQ B: MDM740.DQC ↵
```

The space between `B:` and the filename tells USQ that `B:` is the destination drive, not the drive holding `MDM740.DQC`. If the first parameter of USQ is a drive letter without a filename, USQ assumes it is the destination drive.

You can un-squeeze more than one file, and on more than one disk drive, by naming more than one on the command line:

```
A>USQ MDM740.DQC B:M7LIB.DQC ↵
```

This command un-squeezes MDM740.DQC on drive A and M7LIB.DQC on drive B. The resulting new file MDM740.DOC is put on drive A, and M7LIB.DOC on drive B.

The original squeezed files are not disturbed. If you have already copied them to archive disks, you can erase them from your work disks and use the un-squeezed versions. However, if you un-squeezed a ".CQM" or ".OQJ" (".COM" or ".OBJ") file, test it first before erasing the squeezed versions.

You can't specify the name of the un-squeezed file, so make sure there isn't a file with the same filename on the same disk. When USQ creates the new un-squeezed file, it overwrites any file by the same name. The name is stored in the original squeezed file.

When you type more than one filename with USQ, each file is processed in order. You can type as many filenames as you can fit on a command line (use Control-`E` to extend a command line to the next line). However, the filenames you give to the original version of USQ must be *specific* names, not ambiguous filename matches. You must use FLS with the original USQ to make use of filename matches.

More recent versions of USQ will accept filename matches using the * and ? symbols. For example:

```
A>USQ *.DQC ↵
```

This example un-squeezes all ".DQC" files on drive A.

```
A>USQ B:MDM????.?Q? ↵
```

This example un-squeezes all files on drive B that match the pattern `MDM????.?Q?`, where every ? is any single character or space.

There are many ways to display the contents of a squeezed text file. USQ lets you do this by specifying the number of lines of the file to display:

```
A>USQ -10 MDM740.DQC B:M7LIB.DQC ↵
```

This command does not create new un-squeezed files from the squeezed ones; it simply un-squeezes in memory, then displays the first ten lines of both files. You can use this form of USQ to see the contents of files on a disk where there is no room to create un-squeezed versions.

If you don't know how many lines you need to see, try this version of the command:

```
A>USQ - B:M7LIB.DQC ↵
```

This command displays the first 65,535 lines of the file in un-squeezed form. Most files have less than this number of lines, so the entire file is displayed until you type a Control-`C`.

The USQ display routine strips the "high bit" from each character (the "high bit", "high-order bit" or "parity bit" as it is known, is used by programs like WordStar to mark characters for printing features like underline, boldface, variable spacing, etc.); therefore, WordStar text files appear with normal spacing and underlining/boldfacing commands as text. Other "control characters" appear as periods, including the "empty" part of the file following the last word.

If you have a lot of files to un-squeeze, type the command `USQ` followed by Return to get the USQ asterisk prompt (*). You can then type USQ expressions to be executed immediately. To exit USQ, type Control-`C` in the assembly language version (1.20), or Return on a line by itself in older versions (similar to using PIP in CP/M). The following example shows the assembly language version (USQ120):

```
A>USQ120 ↵
USQ v1.20 1/07/84
Use: USQ afn [afn afn ...] [destination drive:]

*B: NSWP205.DQC ↵
```

Squeeze/unsqueeze *continued on page 73.*

CP/M-80 •
CP/M-86 •
PC-DOS •
MS-DOS •

Library Files and Utilities

How to extract free software from public domain library files, and how to create and manage your own library files.

by Tony Bove & Cheryl Rhodes

Much of the free CP/M software available from user groups and other sources is organized into disk volumes with files combined into *library files*. A library file is a large file that contains smaller files that are usually related to each other.

For example, all the files associated with the MDM740 program (the main program, the overlay files, and the documentation file) are in the MDM740.LBR library file. The MDM740.LBR file appears in the directory as one file, and although it has several *member files* contained within it (MDM740.DQC, MDM740.OBJ, MDM740.INF and others), it takes up the directory space of one CP/M file. A library file usually has the extension ".LBR".

Similar public domain program files are organized into a library file for three reasons:

- A library file takes up less disk space than the file's individual member files.
- It is easier to find all the files you need for running and modifying a particular program such as Modem7. Simply find the library file containing all the files you need.
- It is easier and faster to download a library file containing member files than it is to download each member file separately.

For these reasons you are encouraged to copy or download an entire library file rather than copying or downloading individual member files of the library file. You must, however, obtain a *file extracting* utility for your system, so that you can extract the member files from the library file on your system.

The easiest file extracting utilities to use are LSWEEP13 and NULU. Both programs let you open a library file and extract member files; if the member files are in squeezed format (as described in a related tutorial in this issue), LSWEEP13 automatically un-squeezes them, whereas NULU gives you a choice to un-squeeze or not un-squeeze.

If you want to be able to create library files for use with your computer, get either NULU or the full-blown LU300 utility. Library Utility version 3.00 (LU300), written by Gary P. Novosielski, is described in detail in this article, as are NULU and LSWEEP.

Looking At Library Files

When you call a bulletin board system such as the FOG BBS (First Osborne Group's Bulletin Board System), you can display all files in a disk/user area using the enhanced DIR utility (type `DIR` and press Return). However, this command does not show the member files inside the library files.

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To see each library file's member files in a DIR display, use these options that are available with the DIR utility:

```
A0>DIR $L ↵
```

(The ↵ symbol stands for the Return key; this typeface is what you type, and this typeface is what is displayed.)

If this command does not work on the BBS you are using, try this command, substituting the actual name of the library file for library below (you can leave off the ".LBR" extension):

```
A0>LDIR library ↵
```

The display should include the name of the library file and the filenames of all the member files. Some versions also display the sizes of these member files, and a special CRC (cyclic redundancy check) number for comparing versions of files. The CRC number may be zero if the library file was maintained by NULU or an early version of LU.

LDIR (written by Gary P. Novosielski) accepts the "wildcard" symbols * and ? in filename matches; therefore you can use this command to see all member files for all libraries in the current drive/user area:

```
A0>LDIR *.LBR ↵
```

You can also use the LU or NULU utilities to display a directory of the member files in a library, or use LSWEEP13 or NULU to see each file.

Extracting With LSWEEP13

LSWEEP13 (Library SWEEPer version 1.3) was written in the BDS C language by Joe Volger with pieces borrowed from LDIR and LTYPE (Gary P. Novosielski), USQ (Dick Greenlaw) and TYPESQ (Bob Mathias).

LSWEEP was designed to make it easy to extract member files from library files using a "sweep" mode. You can step through the file's names picking files for extraction. LSWEEP looks a lot like NSWEEP (see related tutorial on "Squeezing") and combines library extraction and unsqueezing into one easy step. However, LSWEEP does little else; you may still need LU or NULU for other library operations if you intend to use libraries on your disks. You may also need LSWEEP's "cousin" NSWEEP.

LSWEEP can extract or display a squeezed or unsqueezed member file of a library file. However, if a file to be extracted is squeezed, LSWEEP version 1.3 will un-squeeze it whether you want it to or not. (NULU gives you a choice.)

To start LSWEEP, type the command LSWEEP followed by one or more library names (unless the extension is ".LBR", which is assumed, you must specify the library name's extension):

```
A>LSWEEP MDM740 ↵
```

This command opens the library MDM740.LBR. You see the following on your screen:

```
                    LSWEEP
                Ver:1.03 84-22-01
                  Joe Volger

            Derived from: LDIR & LTYPE
COMMANDS:

 ? - Displays this menu.
 E - Extracts (and unsqueezes) a member.
 V - Views a (viewable) file.
 X - Exits this program.
     Any other input skips to the next member.

Library: MDM740.LBR has 12 entries, 3 free:
MDM740.LBR * 1. M7FNK    .COM  3k >
```

The "current member" is M7FNK.COM, and its size is 3k. You can extract this file by typing E, or you can display it by typing V. If you type ? you display the above menu again; if you type X, you leave LSWEEP and return to the operating system. Any other key advances you to the next member. You can skip easily from one member to the next by pressing Return or any key other than ?, E, V, or X. You can't move backwards, but when you reach the last member, another Return moves you to the first member.

```
MDM740.LBR * 1. M7FNK    .COM  3k > ↵
MDM740.LBR * 2. M7FNK    .DQC  2k > ↵
MDM740.LBR * 3. M7LIB    .COM  2k > ↵
MDM740.LBR * 4. M7LIB    .DQC  2k > ↵
MDM740.LBR * 5. M7NM-6   .AQM  5k > ↵
MDM740.LBR * 5. MDM740   .COM 19k > ↵
MDM740.LBR * 6. MDM740   .DQC 26k > ↵
MDM740.LBR * 7. MDM740   .IQF  8k > ↵

MDM740.LBR * 1. M7FNK    .COM  3k > ↵
MDM740.LBR * 2. M7FNK    .DQC  2k > ↵
MDM740.LBR * 3. M7LIB    .COM  2k > ↵
MDM740.LBR * 4. M7LIB    .DQC  2k >
```

To extract a member, type E. LSWEEP asks for the drive to store the extracted copy. Type a drive letter and colon, or press Return for the current drive:

```
MDM740.LBR * 4. M7LIB    .DQC  2k > E
To Drive? (CR for default) ↵
Extracting file -> M7LIB.DOC Done.

MDM740.LBR * 4. M7LIB    .DQC  2k >
```

LSWEEP extracts the file from the library file, and *unsqueezes* it if the file member was squeezed. If the file member was not squeezed, it is extracted as an exact copy. Either way, if a file with the same name exists on the same disk, it is deleted as the extracted copy is created.

LSWEEP version 1.3 (LSWEEP13) does *not* verify the accuracy of the file as LU300 does (Library Utility 3.00). Perhaps a future version will.

You can line up several libraries to sweep through by typing their names on the LSWEEP command line:

```
A>LSWEEP MDM740 NSWP205 UNERA15 ↵
```

This command sets up three libraries: MDM740.LBR, NSWP205.LBR and UNERA15.LBR. As you extract or view or simply step through the member files of MDM740.LBR, you can use the X command to move on to the next library, NSWP205.LBR, and extract, view or step through the members of that library. Another X at this point moves you on to the final library, UNERA15.LBR.

If you want to sweep through all the ".LBR" files on a disk, try this version:

```
A>LSWEEP *.LBR ↵
```

Try to specify a proper filename match (using * and ? symbols) that selects only library files. Non-library files are ignored by LSWEEP.

LSWEEP version 1.3 does not try to take the place of LU (Library Utility), which is essential for managing your own libraries. On the other hand, NULU is designed to replace both LSWEEP and LU.

Extracting With NULU

NULU (version 1.0 written by Martin Murray, System Solutions, P.O. Box 35972, Dallas, TX 75235) is a new program that replaces LSWEEP and LU that combines all the functions of LU with the easy file-by-file sweep operation of LSWEEP.

Before NULU, LSWEEP was one of the first programs to be downloaded from bulletin board systems, because it was the easiest to use for extracting files from libraries downloaded intact from bulletin boards. Now NULU is a candidate to be the first program to download, because it combines un-squeezing, extracting, and library management into one utility.

Start NULU by typing its name on the CP/M command line. This puts you into NULU's command mode, which lets you organize a library, extract member files, and do many other things. To learn how to use NULU quickly, we recommend using the "file sweep" mode of NULU.

To start "file sweep" mode, type the -F command and press Return (↵). NULU presents the file sweep mode commands you can use:

```
-AWAITING COMMAND A0:>-F ↵

                NULU Filesweep Menu

A Next member              B Previous member
C Close the library        D Delete member
E Extract member           L Log new library
P Print member             Q Unsqueeze member
R Rename member            U Drive/User change
V View member              W Wildcard rename
X Exit NULU                Y Disk directory
Z NULU command mode        ? Menu

Drive A: Total 600k, Used 552k, Free 48k

No library open. Z ↵
-AWAITING COMMAND A0:>
```

We used the Z command from file sweep mode to return to NULU's command mode. To return to file sweep mode, type -F ↵. To leave file sweep mode and return to command mode, type Z ↵. To leave file sweep mode and return to CP/M, type X.

To extract members from a library, you must first "open" the library. Type L ↵ (for "log" a new library). NULU then asks for the library file name. Provide the name and the drive letter or user area number if the library file is not in the same drive and user area as NULU.COM:

```
No library open. Library name:NSWP205.LBR
Library A0:NSWP205.LBR open.
(Buffer size: 302 sectors)
Active entries: 3, Deleted: 0, Free: 1, Total: 4.
1. NSWP205 .COM  12k : ↵
2. NSWP205 .DQC   2k :
```

As soon as you "log" or open a library, the first member file appears. You can press Return (↵) or type an A to move down the list of member files. NULU displays each member file's name along with the file's size in kilobytes (1K, or one kilobyte, is equal to 1024 bytes or characters) — this is the amount of disk space the file would occupy if it was extracted from the library to become a separate file on the current drive.

You can extract any member file you wish by pressing Return until the cursor falls on the member file, and then typing the E or Q commands: E extracts without un-squeezing, and Q extracts and un-squeezes in one step. You can use either command with a drive letter and user area number to send the extracted copy to another disk and/or user area:

```
2. NSWP205 .DQC   2k :E ↵                    (Extract only.)
2. NSWP205 .DQC   2k :Extract to: : ↵        (To
Extracting...                                current drive.)
NSWP205 .DQC to A0:NSWP205 .DQC
2. NSWP205 .DQC   2k :Q ↵          (Extract and un-squeeze.)
2. NSWP205 .DQC   2k :Unsqueeze to:B: ↵        (To drive B.)
```

You can also specify a new filename for the extracted copy. Here's an example:

```
2. NSWP205 .DQC   2k :Q ↵
2. NSWP205 .DQC   2k :Unsqueeze to: B:NSWEEP.DOC ↵
```

You can use the V command to view a member file, and P to print one. These commands come in handy when you want to view a squeezed information file or print a squeezed ".DOC" file without actually extracting them from a library.

Running Programs Stored In Libraries

The LRUN command was designed by Gary P. Novosielski (with help from Ron Fowler) for running programs that are stored within library files.

Small ".COM" files usually waste disk space, because many floppy disk systems allocate 2K for a file even if it is much smaller, and some hard disk systems allocate up to 8K for each file even if it is much smaller.

You can save disk space by combining many small ".COM" files into one library file. For example, you might combine all of your small utility files into one library called UTILITY.LBR on your disk.

You can then run any ".COM" file in this library using the LRUN command:

```
A>LRUN -UTILITY FINDBAD ↵
```

This command runs the program FINDBAD.COM, which is stored in the library UTILITY.LBR.

The dash (-) in front of the library name tells LRUN it is a library name, not a filename. If you use a dash without a library name, LRUN assumes the name of the library is COMMAND.LBR. If you specify a drive with the library name (e.g., -B:UTILITY), LRUN searches that drive only for the library; otherwise, LRUN searches the current drive for the library, and if it is not found there, LRUN automatically searches drive A, user area 0.

Here are more examples of LRUN:

```
A>LRUN - ED SAMPLE.TXT ↵
```

This command searches the library COMMAND.LBR for the program ED.COM, and if it finds it, it runs the program with the parameter SAMPLE.TXT (ED requires such a parameter).

```
A>LRUN -C:SPECIAL LU -O COMMAND -A A:*.COM
```

This command searches the library SPECIAL.LBR on drive C for the LU.COM program. If it is found, LU.COM is executed with the parameter list -O COMMAND -A A:*.COM. These LU commands are described next in this tutorial.

LU300 (Library Utility vers. 3.00)

The LU300 program, written by Gary P. Novosielski, lets you organize many similar files into one library file, extract files from a library file, display the member files in a library file and reorganize a library file. The program works with CP/M version 2.0 or a newer version (most CP/M systems in use are version 2.2 or CP/M Plus (3.0)).

LU (version 3.00, or LU300) has two cousins: LTYPE, which displays the contents of member files stored in a library file, and LRUN (version 2.0, or LRUN20), which runs programs that are stored within libraries.

You can start LU by typing its name, and then type LU commands to perform operations; or you can type all of the LU commands to execute, with the parameters you need with them, on the same command line with LU. You can also send LU commands to LU from a disk file.

Why Make Library Files?

One important reason is the ease with which you can transfer packages of software from one system to another using Xmodem. You can transfer one library file and effectively transfer many files at once. Filename conflicts of individual files (such as the many instances of READ.ME in packages) would not occur on the receiving disk. Since Xmodem also has a way of downloading an individual member file from a library file, you can have the best situation: library files and easy extraction.

But there are other reasons. A library file usually takes up less space than the sum of its individual member files. Floppy disk systems allocate disk space in blocks of 2K or more bytes per allocation block, and hard disk systems may allocate up to 8K per block. As a file grows, another block is allocated on disk for it. If the file doesn't use the entire 2K (or up to 8K on hard disk systems), the rest remains as dead space on the disk, not used by any other file.

Files organized in a library file use only as much as they need, because space is allocated for the library file as it grows, not for the member files. A member file cannot grow once it is inside a library file, but you can delete a file from a library and add a new version of the file, or add new files, and not waste disk space. The member files in a library use only the number of sectors they actually need, although the library file itself may have a partially-wasted block at the end.

The library file also saves directory entries. There is a limit on the number of directory entries you can have in one directory, which can limit the number of files you have, especially if most of them are small. The library file consolidates many files under one set of directory entries for the library file.

Although the library file needs to reserve space for its own member information at the beginning of the file, the net effect is usually a saving of total disk space. You get the best results when you combine many small files into one library. Library files are also useful as file archives, where they can act as "labels" for entire "shelves" of files.

There are also reasons for *not* using library files. Member files in a library file are not available to programs like word processors or text editors. Although you can run a ".COM" file that resides in a library file, you have to extract text files, data files and anything else used with your programs.

Library files can actually waste disk space if you delete a member file. The library can't re-use the space left by a deleted file unless you use the -R command to reorganize the library.

Perhaps the strongest reason against using library files is the fact that you cannot rebuild a library file if it is somehow "trashed" on the disk (if one bad sector occurs in the library file). The only solution is to rely on backup copies of the library file.

Extracting Using LU

One easy way to use the program is to type LU followed by Return, then use LU commands. When you start LU it displays the following:

```
A>LU300↵

Library Utility        Ver:3.00 83-08-16
Copyright (c) 1983 by Gary P. Novosielski
-? 0/A:>
```

The LU prompt -? 0/A:> in the above example changes as you type LU commands. Here's the general meaning of it:

-? This prompt shows the current LU command in effect (the question mark signifies no command in effect). If you type the -E command, the prompt changes to -E. All LU commands start with a dash.

0/A:> This part of the LU prompt tells you the current user area (zero) and disk drive (A:).

The first thing to do is determine which drive and user area to use to receive the extractions. You must first make sure the disk you choose has enough space to store the extracted copies. To store the extractions on another disk or in another user area, start your LU session with the -U command.

You can type the command using a lower case letter (-u), but don't forget the dash. If you don't type the dash, LU thinks you are opening a new library file to start adding new members; it calls the new library LIBRARY.LBR. If this happens, answer 0 to the number of entries, and LU will stop. You can then re-start LU.

Here is the -U command changing the current user area to one and the drive to B:

```
-? 0/A:>-u 1/b:↵
-U 1/B:>
```

The extractions will now be stored on drive B.

The second thing you must do is *open the library* using the -O command. Type the -O command and the name of the library (LU assumes the library file has the extension ".LBR"; if you use another extension for the library file, specify it):

```
-U 1/B:>-o 0/a:mdm740↵
Old library: MDM740.LBR has 12 entries, 3 free.
-O 1/B:>
```

Note that although we are "logged into" drive B, user area 1, we can still open a library file that resides in any user area or drive — MDM740.LBR is in user area 0, drive A, so we prefix the name with 0/a: (lower case letters work as well as UPPER case).

Now look at the file members in the library by typing the -L command:

```
-O 1/B:>-l
Library: MDM740.LBR
Name              Index     Size      CRC
DIRECTORY                    3
M7FNK.COM             3     24      D211
M7FNK.DQC            27     14      67B0
M7LIB.COM            41     15      F500
M7LIB.DQC            56     14      EA1E
M7NM-6.AQM           70     34      E1AF
MDM740.COM          104    146      E7B1
MDM740.DQC          250    203      25FB
MDM740.IQF          453     57      DA9A
Active sectors              510
Unused                        2
Total                       512
Active entries: 9, Deleted: 0, Free: 3, Total: 12.

-? 1/B:>
```

After displaying the list of file members, the prompt changes to a question mark, showing no command in effect.

Scanning this display you can tell how much space you will need to store the extracted copies of the files you want. To extract a file, type the -E command with the name of the file:

```
-? 1/B:>-e mdm740.dqc↵
Extracting: MDM740.DQC
-E 1/B:>
```

When you type an LU command such as -E, it stays in effect until you type another one. Therefore, with the prompt showing the -E command in effect, you can go ahead and type the name of another member file to extract:

```
-E 1/B:>m7fnk.dqc↵
Extracting: M7FNK.DQC
-E 1/B:>
```

LU performs a "cyclic redundancy check" (CRC) to see if the extraction you get is exactly the same file (has exactly the same characters) as the one stored in the library. The CRC check is useful for checking members of libraries which were created on bulletin board systems or other systems and which were transmitted by phone (possibly several times) before you receive them. If the CRC check does not show an exact duplicate, you get this message:

```
CRC error. M7FNK.DQC file questionable.
```

Whenever you add a new member to a library using LU300, a CRC value is calculated for that member and stored in the member's directory entry. When you extract the member file, LU performs the calculation again and compares values. If the value is not the same, it may be due to a glitch in the library file caused by an error in transmission.

However, the error message may also be due to the fact that other library utilities do not use CRC checking. ".LBR" files created by older versions of LU (e.g., LU111) and by NULU have no CRC value, and when LU300 extracts each member, it displays the above error message even though the extracted file is proper. You know this is the case when the CRC value is 0000 — it means the ".LBR" file was created by an older version of LU or by NULU.

You can extract as many files as you wish, or use other LU commands which we summarize in this article. All LU commands are a dash and a single character. If you use a dash and a single character as the name of a member file in a library (e.g., -Z as a filename, with no extension), always specify it as `-Z.` (with a period).

LU Commands

Before you can use LU commands on a library, you must first open a library file with the the `-O` command, and type its name. The command remains in effect until you type another command; therefore, if you type another filename, the `-O` will still be in effect and it will close the first library file and open the new one.

Here's a summary of the LU commands:

`-A` Add new member files to the library. Any subsequent filenames you type should be names of existing files to be included in the open library file. You can add several files by typing their filenames one by one, or using a filename match with the wildcard ? and * symbols.

`-B` Set the buffer size (version 3.00 only), to be used only when you start up LU. The `-B` command reads the next number you type as the size (in sectors) to allocate for a disk input/output I/O buffer. Usually a 64-sector buffer is used by LU, and this is plenty for normal libraries. However, a larger buffer will increase the speed of adding, extracting and reorganizing, but the increase varies widely with different computers. Also, a large buffer decreases the number of directory entries LU can process.

`-C` Close the open library. You don't usually need this command, since any open library is automatically closed when you end your LU session or open another file with the `-O` command. It is provided for when you want to change disks. You must close the library before changing a disk. After changing the disk, use the `-U` command.

`-D` Delete member files from the open library. It does not free up the space occupied by the files — you have to use the `-R` command to reorganize the open library.

`-E` Extract files from the library by making copies as regular CP/M files by the same name used in the library. If a CP/M file exists by the same name, it is deleted unless it is protected by the read-only attribute. The original copy in the library is not disturbed. You can type a filename match or several individual filenames.

`-L` List the member files in the library. Each member filename is displayed with the "index" (starting record within the library), the file size in 1K increments, and the internally-calculated CRC (cyclic redundancy check) value. Also displayed is the number of active entries (members) in the library, the number deleted, the number free for future additions, and the total number allowed in the library.

`-N` Rename a member. You provide the new name first, followed by an equal sign and the old name: `newname.ext=oldname.ext`.

`-O` Open a library. With `-O` in effect, the next filename you type is treated as the name of a library file to be opened for use. If there is already an open library, it is first closed, and the new one opened. You can open a library on another disk and in another user area by specifying the user number `u` and the drive `d` with the filename, like this: `u/d:filename.ext`.

`-R` Reorganize the open library. This command reclaims the space left after you've deleted files from the library. It also lets you change the maximum number of directory entries for the library, so that you can add more files. It does this by copying all the active members to a new library, leaving behind and deleting the inactive members occupying space on the disk.

The new library is organized in the current user area and drive (you can change the current user/drive with the `-U` command). You must have room on the disk to fit an entire library as big as the existing library. If you want to decrease the size of a library, specify a maximum of `1`; LU will automatically set the maximum to the number of active members, leaving no free entries.

`-U` Use new default user area/drive. Use this command to change the current user area and/or drive. Express this parameter in the form `u/d:`, where `u` is a user area number (0 through 15) and `d` is an existing drive on the system.

When you change a drive with `-U`, any open library is first closed and the disk system is reset. You can therefore change disks and then type `-U` to "log in" the new disk. Use `-O` to open a library (which can be on any

drive or user area), and have all results occur in the user/drive set with the -U command.

-X Exit the LU program. This command also closes the open library.

You can put LU commands and corresponding parameters on the LU command line to execute as a "batch operation." For example, you could use this LU command to extract M7FNK.DQC and M7LIB.DQC from the MDM740.LBR library:

```
A>LU300 -U 1/B: -O 0/A:MDM740 -E M7FNK.DQC M7LIB.DQC ↵
```

This command changes the destination user area and drive to 1/B:, then opens the library MDM740.LBR (user area 0, drive A), then extracts M7FNK.DQC and M7LIB.DQC from the library and stores the copies in user area 1 on drive B.

Safety Net

We cannot overemphasize the importance of keeping backup copies of library files. Unlike a normal CP/M file whose directory entry and entire contents can be reconstructed using various "disk surgery" utilities like UNERA or DU (described in issue #4), if something happens to damage a library file's directory, it is nearly impossible to reconstruct the entire library file or retrieve its members.

To minimize the risk of damaging the library file's directory entry, LU reads the library file's directory entry into memory and makes changes only to the memory version until you close the library (or until LU closes the library).

For example, let's say you opened a very large library with lots of members, then accidentally typed the -D *.* command, which deletes every member of the library file. Your heart may sink as you watch the names of precious library member files go by with the message DELETED, but the deletions have not yet occurred on disk. After the operation, stop LU by typing a Control-C. This cancels the LU program without updating the disk version of the library file; therefore, the library file should remain intact.

NULU or LU?

NULU's virtue over its competition is that it offers a choice for un-squeezing when extracting member files. LU300 extracts files but knows nothing about un-squeezing squeezed files; LSWEEP13 un-squeezes squeezed files when it extracts them, whether you want to or not (un-squeezing a file requires more disk space than the amount occupied by the squeezed file).

NULU also offers more choices than LU300 or LSWEEP13. You can view and print the contents of member files without extracting them, and NULU will un-squeeze squeezed files before displaying or printing them. You can make bigger libraries with up to 800 member files in each library. Member files are kept in sorted order, and libraries can be reorganized very quickly.

NULU's command set is very similar to LU, with some additional commands and enhancements to existing commands. The only LU function not covered by NULU is the maintaining of CRC numbers for each member file. NULU changes any LU-set CRC numbers to zero; LU regards a NULU-modified library to be like one created by an earlier version of LU that did not use CRC numbers.

Another difference is that filename matches (also called ambiguous filenames) can be abbreviated in certain ways: *.* (specifying all files) can be typed as **, *.TXT (specifying all ".TXT" files) can be typed as *TXT, and if you type a drive or user area (or both) without a filename match, it assumes you meant *.* (all files).

The syntax is liberal for typing drive letters and user area numbers. You can type A15:*.* or 15A:** or 15/A:** to specify all files in user area 15 of drive A. To specify all files on the current drive, you need only type the colon by itself.

As with LU, NULU can be typed on a CP/M command line with numerous NULU commands on the same line (up to 128 characters). Also like LU, all NULU commands are preceded by a dash (-) and are displayed in the prompt.

Here's the NULU command menu, which is displayed whenever you type the -M command:

```
-A Add members          -B Brief toggle
-C Close the library    -D Delete members
-E Extract members      -F Filesweep mode
-G Get filespec         -K Krunch the library
-L List members         -M Menu
-N Rename members       -O Open a library
-P Print members        -Q Unsqueeze members
-R Replace members      -T Replace/Add members
-U Drive/User change    -V View members
-X Exit NULU            -Y Disk directory
-< Redirect input       -> Redirect output
```

Should you get NULU instead of LU300 and LSWEEP? Overall NULU has a better mix of functions, but as of this writing, NULU is still very new (version 1.0) and not yet thoroughly tested. We used NULU and found no problems with it; however, new programs usually need to be tested for months before they are considered foolproof. LU300 (LU version 3.0) is the most reliable of the three, since LSWEEP13 (version 1.3) is also a new program. We recommend that you use LU300 to manage libraries, and USQ to un-squeeze files, until NULU is thoroughly tested.

LU For PC-DOS & MS-DOS

A version of the LU utility program is available for the IBM PC and MS-DOS computers. This version of LU manipulates ".LBR" files in the same manner as the CP/M version, but the commands are different. The PC/MS-DOS

version of LU can handle both CP/M and PC/MS-DOS library files.

For a quick summary of the LU commands, type LU by itself on a command line, followed by Return. To actually perform LU operations, you must put LU commands on the same command line.

For example, the following command displays all member files within the library file UTILITY.LBR:

```
A>LU T UTILITY.LBR ↵
```

All LU commands are a single letter (dash is not used). Only one command can be entered at a time. The commands are:

A — Unpack all files from the library. This is the same as using the E (extract) command to extract all the member files by typing the command followed by all the filenames. The A command is much easier to use if you want all of the member files.

L or T — Display the filenames of all member files in the library file. Each filename is shown with the size of the file in bytes and its starting record number within the library file.

E — Extract a member file from the library. You type the names of the file(s) to be extracted after typing the library name. Each file is extracted and copied to a disk file of the same name.

U — Update a library file. You use this command to create new libraries. Enter filename(s) after the library filename. Each file is added to the library. Any file of the same name already in the library is replaced by the new one.

If the library file does not exist (you are creating a new one), you are asked for the number of new slots for the library. "Slots" means the maximum number of files that the library file can hold. The number you enter is rounded up to the next highest multiple of four; this is just a peculiarity of the library file structure.

D — Delete a member file. This command marks the member file within the library as "deleted". The library file does not change in size, nor does LU remove the data contained by the file. You must reorganize the library file to reclaim the space.

R — Reorganize the library and reclaim the space from deleted files, or existing files that were updated. The library file generally becomes smaller. You should use this command after using the D or U command.

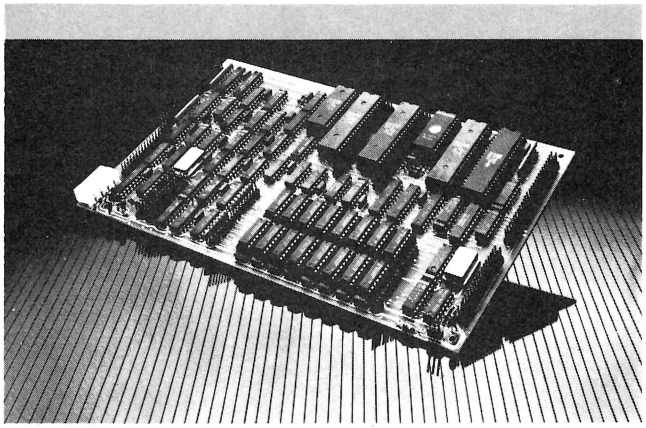
There are a few known "peculiarities" (read "bugs") in the PC/MS-DOS version of LU. One is that if you specify a filename that has no extension as FILE. (with a period but no extension), LU can't find the file; if you specify it without the period (FILE), LU will find it. Another is that all files are rounded up in size to the nearest 128 bytes. This usually doesn't matter for most files, but some files (like spreadsheets) will not work properly unless the size is exactly correct (not rounded up to the nearest 128-byte boundary). You can't put such files into PC/MS-DOS libraries using LU.

End of Lesson

The LU programs for CP/M and MS-DOS are written in the C language and compiled with the BDS C Compiler. Source files are available, and a more detailed explanation of library files can be found in a ".DOC" file accompanying LU300.

NULU can also be modified to change many of its operations following the instructions provided in the NULU.DOC file. All changes are made using the DDT utility supplied with CP/M.

Remember, library files cannot be reconstructed if you have a disk error. There is no easy way to fix a damaged library file — the best way is to replace it with a backup copy that is in working order. Keep a copy of every library file you create, and make sure that copy is on a separate disk. You don't want to lose valuable data.



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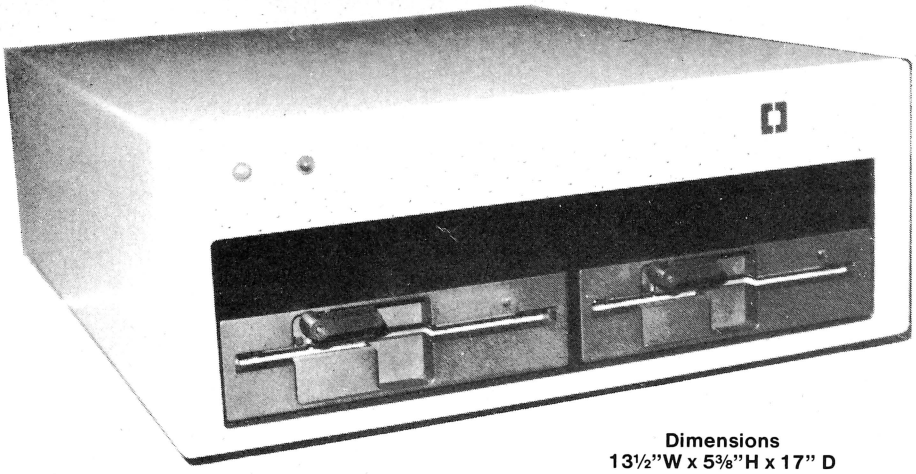

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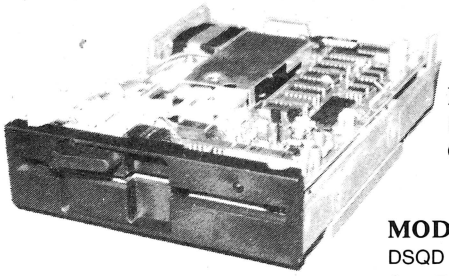

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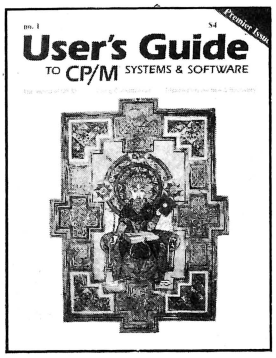

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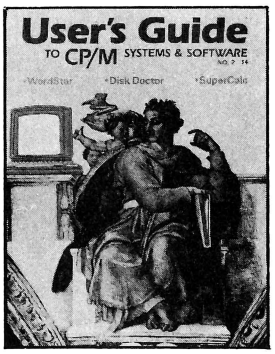

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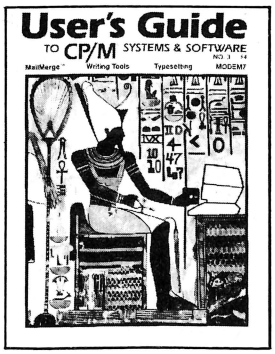

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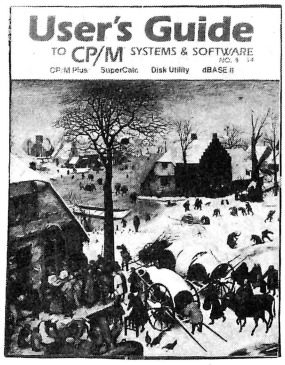

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CATALOGUING YOUR DISKS

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I promised last issue that I'd be discussing the Library Utility series in this column. For reasons that are explained at the end of this column, I have elected to skip that subject this issue and hope to be able to present it fully in the near future. Instead, in this issue we're going to talk about cataloguing programs. *(Ed. note: the LU300 utility is described in a tutorial in this issue).*

The Problem & The Solution

When I first got my microcomputer I kept only a few of my own files along with the software disks that came with the system. It wasn't long before I had accumulated enough of my own disks that I would be frustrated whenever I wanted to find a file. It was sheer tedium to put disk after disk in my drives, type `DIR`↵, and watch the screen display a list of files only to find that it wasn't on any of those disks.

I soon found and joined a user group and discovered public domain software. There was disk after disk of software to be copied from the library. I think we came home from the first meeting with about fifteen disks, over a megabyte of files to be run, printed out and read, studied — and lost somewhere on a disk (which one?) never to be found again.

Fortunately, I soon discovered that one of the files obtained at that first meeting was a file cataloguing program called MAST.CAT. There was also a program called NEWCAT32.COM, another called CAT.COM, and finally, CAT2.COM. I read the documentation and thereby discovered the solution to my problem. Soon I had a MASTer CATalog, with a list of all my files neatly sorted in alphabetical order, each with a "tag" to tell me where it was.

The Master Catalog Series: How It Works

The master catalog series reads the disk directory of each disk that you want included in your master catalog and adds the file names to the MAST.CAT file. If the disk has been catalogued previously, the program compares the list of files now on the disk to those listed in MAST.CAT. It then adds any new files and deletes those no longer on the disk. In addition, each time a disk is catalogued the program checks the amount of free space on the disk and adds that listing to the MAST.CAT file.

Brief History

Those of us who got our microcomputers "late in the game" (that is within the last two years or so) have been fortunate that public domain software has been around for a while. As a result, many of the programs have matured and by now are quite sophisticated and often easy to use. Like many public domain programs of note, the master catalog series was begun by Ward Christensen, but later revisions have been done by others.

In the early days of the catalog series you had three programs, FMAP.COM, UCAT.COM, and CAT.COM, that had to be used sequentially in order to get the list of files from a disk directory and get them into the MAST.CAT file. Later these were combined into a single file, called NEWCAT.COM, revised into NCAT32.COM, and (as far as I can find) most currently known under the names MCAT41.COM and MCAT43.COM. MCAT43 differs from MCAT41 only in that it supports CP/M Plus in addition to CP/M 2.2.

Identifying Disks

The first thing to do to make a Master Catalog using this series of files is to identify the disks. Of course a label on the disk is nice for you and me. But your computer can't read file labels, and we don't want to have to tell the computer what disk we are working with by reading a label and typing in the disk name or number or run a bar code reader over it. So we have to have a means of putting something on the disk that will allow the computer to tell which disk is which directly. The solution is to put something on the magnetic media itself that allows the computer to identify the disk.

Ward Christensen developed the scheme that we use. It takes advantage of the of the ASCII (American Standard Code for Interchange of Information) scheme of ordering the letters, numbers, and symbols that comprise the data in the computer. Christensen created a disk identifier file, one with no information or data in it — an empty file — with a filename that starts with a hyphen (-). Since the hyphen sorts near the top of any ASCII-sorted list, the disk identifier file will usually sort to the top of a list of filenames when you display the list with a directory program such as SD.COM, D.COM or XDIR.COM.

(Actually, ASCII order puts the symbols !, #, $, %, &, (,), *, and + symbol ahead of the hyphen, so that if you have a filename that begins with one of these symbols it will sort ahead of the disk identifier when using any directory scheme that sorts filenames into ASCII order, or when using the MAST.CAT series. It might be better if Christensen had adopted the "!" as the disk identifier marker, since it would always sort to the top of the list, but the use of the hyphen is so entrenched at this date that it seems unlikely that it will ever be changed.)

Therefore, to identify a disk we put an empty disk identifier file on the disk. There's a small price to pay for having a file on the disk to identify it — disk directories can only hold a limited number of files, usually 64 with 64K floppy disk based CP/M systems. That means that if you have a file on the disk that does nothing but identify the disk, you've reduced the number of files that you can have on the disk to 63. It's a small price to pay for the convenience of the MAST.CAT series.

With CP/M 2.2 and earlier it's easy to create an "empty" file. The advantage of using CP/M to create an empty file is that the file itself takes up no actual space on the disk. Simply type the following command:

```
A>SAVE 0 -FILENAM.001↵
```

(That's a zero after the SAVE.) Try it out — when you run STAT.COM or any of the super directory programs that tell you file size, you'll see that the file -FILENAM.001 has a size of 0K bytes.

(CP/M Plus users need a way to create empty files — CP/M Plus won't allow you to save a file with zero byte. There's a special program called NULL.ASM written by Guy Gamble that allows easy naming of CP/M Plus disks.)

The file's name starts with a hyphen. Since it would be unusual for any other filename to begin with a hyphen — and once you begin using the MAST.CAT series you'll reserve filenames beginning with hyphens for this use — we and the MAST.CAT series can assume that any filename that begins with a hyphen is not in fact a computer file at all, but simply the disk identifier.

Naming Disks

There are a number of schemes that you can use to assign filenames for your MAST.CAT. Irv Hoff, who has written some of the latest versions of the MAST.CAT series, suggests that you simply number the disks sequentially starting with one. Each filename should consist of a hyphen only followed by a period and an extension consisting of three digits, beginning with 001. Hoff theorizes that you'll never have more than 999 disks.

While you may well never have more than 999 disks, you may still want to have the numbering of different groups of diskettes under separate control and catalogued separately. That way all your SuperCalc files will be located together in one box or group of boxes and your WordStar files in another. That way when you need a group of different WordStar files they'll all be in more or less the same place.

Creating the MAST.CAT File

Now that you've put disk identifiers on all your disks you need a MAST.CAT file. That's the actual data file that will list all of the files on your disks. Usually when you get the MAST.CAT series you get a file called MAST.CAT, and you can use that file without modifying it, if you want to. If you're creating a master catalog for a second group of disks, because you don't have a MAST.CAT file, or because your old MAST.CAT got trashed, you can create a new one by using a word processor or text editor. The file must be called MAST.CAT. The cataloguing programs in the series will look for MAST.CAT.

Excluding Files From Your Catalog

MAST.CAT must have in it a list of files that you don't want included in the master catalog. To create this list you enter an open parenthesis in column one of the first line, followed by a list of files, with one name on each line, that you don't want included in the master catalog. Those might include some utilities that you have on a number of disks, such as PIP.COM and STAT.COM. You conclude the list by closing the parenthesis. You have to have at least one file listed — try DUMMY.FIL if you always want to list all files.

When you get the catalog series of files, you'll probably get a ready-made MAST.CAT file. If you take a look at it, you'll see that it consists of something like the following text:

```
(CONFIG.COM,
LOAD.COM,
PIP.COM,
STAT.COM)
```

These names at the top of the MAST.CAT are the list of files that won't be catalogued in the MAST.CAT. You can use your word processing program to edit the list of files not to be catalogued or to create any number of additional MAST.CAT files, each with your own list of files not to be catalogued if you want separate MAST.CATs for different groups of disks.

I have a box of "system" disks that mostly contain the programs that I use with some regularity — one of the disks has a MAST.CAT on it. I have a couple of boxes with programs that I've gotten from the public domain — one of those disks has a MAST.CAT on it. I have a box of disks that are data files, both text and SuperCalc files — and one of those disks has a MAST.CAT on it. When I want to find a program or file I look at the appropriate MAST.CAT.

Using the Master Catalog Programs

The program you run to get names into the MAST.CAT is the New CATalog program or NCAT, perhaps version 3.2, or the newer Master CATalog or MCAT, versions 4.1 and 4.3 being the latest I have seen. You have to put NCAT or MCAT on the disk with MAST.CAT. All the versions mentioned here work with both one and two drive systems.

You put the disk with NCAT or MCAT and the MAST.CAT file in drive A. If you type the program name and a question mark (?), it displays a short help guide. (By the way, this is a common feature of public domain software — typing the program name without any parameters or with a question mark displays help. If you have a program and don't know anything about it, try it and see if it helps.)

One-drive Operation

With a one drive system you have to do a bit of disk swapping. You put the master catalog disk in the drive and type MCAT↵. You'll get a prompt on the screen:

```
CATALOG PGM v4.0 - 11/20/83

For help, reboot then type: MCAT40 ?

The DISK TO BE CATALOGED and the CATALOG SYSTEM DISK
will alternately be placed in Drive A:

Mount DISK TO BE CATALOGED in Drive A: Ready? (Y/N):
```

You then remove the master catalog disk (or catalog system disk as MCAT calls it) from Drive A and replace it with the disk to be catalogued. Let's say the disk is called - UTIL.001. Answer the question Y. The drive will run and you'll see another message:

```
Processing disk: UTIL.001

Mount CATALOG SYSTEM DISK in Drive A: Ready? (Y/N)
```

Take out the disk to be catalogued and replace the master catalog disk in Drive A. Answer the question Y. The red light goes on to signal activity on Drive A and you get another message:

```
ADD: +++55k.FRE,MASTCAT.001
ADD: CAT21.ASM,MASTCAT.001
ADD: D.COM,MASTCAT.001
ADD: MASCATFU.BAS,MASTCAT.001
ADD: MCAT-41.LBR,MASTCAT.001
ADD: MCAT41.COM,MASTCAT.001
ADD: MCAT41.SET,MASTCAT.001
ADD: NEWQCAT.ASM,MASTCAT.001
ADD: PUTCAT.BAS,MASTCAT.001
ADD: S.COM,MASTCAT.001
ADD: STAMP.DOC,MASTCAT.001
ADD: XCAT40.DOC,MASTCAT.001
ADD: YANC-23.DOC,MASTCAT.001

MAST.CAT has 12 entries, with disk UTIL.001

Mount DISK TO BE CATALOGED in Drive A: Ready? (Y/N)
```

To catalog the master catalog disk, simply leave it in drive A when the Ready? prompt comes on. You keep on swapping disks until you are done. Answer the prompt with N↵.

Two-drive Operation

With a two disk system you type MCAT B:↵. This tells the program that you have two drives, that you will keep the master catalog disk in drive A, and that you will insert the disks to be catalogued alternately in drive B. You will get the same message about how to get help, and then the screen will say:

```
Mount DISK TO BE CATALOGED in Drive B: Ready? (Y/N)
```

You mount the disk and hit Y. The red light next to Drive B goes on, the disk whirrs, and you get the message:

```
Processing disk MASTCAT.001
```

The red light switches to Drive A:, and you get another message:

```
ADD: +++55k.FRE,MASTCAT.001
ADD: CAT21.ASM,MASTCAT.001
ADD: D.COM,MASTCAT.001
ADD: MASCATFU.BAS,MASTCAT.001
```

```
ADD: MCAT-41.LBR,MASTCAT.001
ADD: MCAT41.COM,MASTCAT.001
ADD: MCAT41.SET,MASTCAT.001
ADD: NEWQCAT.ASM,MASTCAT.001
ADD: PUTCAT.BAS,MASTCAT.001
ADD: S.COM,MASTCAT.001
ADD: STAMP.DOC,MASTCAT.001
ADD: XCAT40.DOC,MASTCAT.001
ADD: YANC-23.DOC,MASTCAT.001

MAST.CAT has 12 entries, with disk MASTCAT.001

Mount DISK TO BE CATALOGED in Drive B: Ready? (Y/N)
```

Mount the next disk in Drive B, and off we go!

Using MAST.CAT

Now you've catalogued all of your disks into a MAST.CAT. So what? Well, MAST.CAT itself is an alphabetical list. Here's the MAST.CAT of the files on two of the disks that I've been using to collect files for this article:

```
(XDIR.COM)
++++7k.FRE,MASTCAT.002
+++55k.FRE,MASTCAT.001
CAT21.ASM,MASTCAT.001
CATALL.SUB,MASTCAT.002
CATLBR.COM,MASTCAT.002
CATLBR.DOC,MASTCAT.002
CATLBR.LBR,MASTCAT.002
CATPAGE.COM,MASTCAT.002
CATPAGE.DOC,MASTCAT.002
CATPAGE.LBR,MASTCAT.002
CATUPD.COM,MASTCAT.002
CRSREF.ASM,MASTCAT.002
D.COM,MASTCAT.001
D.COM,MASTCAT.002
FILEPRIN.DOC,MASTCAT.002
LDIRSORT.COM,MASTCAT.002
MASCATFU.BAS,MASTCAT.001
MAST.CAT,MASTCAT.002
MCAT-41.LBR,MASTCAT.001
MCAT41.COM,MASTCAT.001
MCAT41.SET,MASTCAT.001
MCAT43.DOC,MASTCAT.002
NCAT32.LBR,MASTCAT.002
NEWQCAT.ASM,MASTCAT.001
PUTCAT.BAS,MASTCAT.001
S.COM,MASTCAT.001
S.COM,MASTCAT.002
STAMP.DOC,MASTCAT.001
XCAT40.DOC,MASTCAT.001
YANC-23.DOC,MASTCAT.001
```

You could simply keep the MAST.CAT on disk and use CP/M's built in TYPE command to run it up the screen when you wanted to locate a file. That's not very practical, of course. To get a printed report that you could keep handy, you could simply toggle-on your printer with Control-P, and then type the command TYPE MAST.CAT ↵ to print it — without pagination or formatting. You could load up your editor or word processing file and print out a copy of MAST.CAT, adding pagination, headers, and other formatting features. Or you could use one of the many print utilities that have been created for the master catalog series.

YANCAT puts all of the MAST.CAT programs into one bundle that is menu driven and self-documenting, so that you can get all the functions from a single source.

Reports From MAST.CAT

CAT, CAT2, CATPAGE, CATXRF12, LISTCAT, PUTCAT, and XCAT are seven utilities that allow you to see or print reports with varying degrees of sophistication and in differing formats. If you keep these programs on your master catalog disk you'll find it easy to get reports as quickly as your printer can punch them out, and without the need to use a word processor or editor to set them up.

Some of these programs have additional features that make their reports more useful than those you could easily obtain from your word processor or text editor. They all work along more or less the same lines, but the reports that you get are a little bit different from each one. Decide which type of report you like. You may even like different reports for different master catalogs you maintain, or for different purposes.

CAT.COM and CAT2.COM are the simplest of these programs. You simply enter the filename, CAT ↵ or CAT2 ↵. These programs assume that the MAST.CAT is on the logged drive, so if you don't have them on the logged drive you'll have to enter the drive specifier for the program to run. Either program will list the contents of MAST.CAT to the screen, or if you toggle the printer on with Control-P, will print out the report. In either case, there is no pagination, just a continuous listing.

CAT lists the files in columns:

```
    NAME        DISK          NAME        DISK
++++7K  .FRE  MASTCAT .002  +++45K  .FRE  MASTCAT .004
+++55K  .FRE  MASTCAT .001  +++62K  .FRE  MASTCAT .003
CAT21   .ASM  MASTCAT .001  CATALL  .SUB  MASTCAT .002
CATALOG .DOC  MASTCAT .004
```

The files are listed alphabetically across each row, then down to the next row. Each file has its own individual listing each time it is found. So a file that is found four times will be listed four times:

```
D        .COM  MASTCAT .001  D        .COM   MASTCAT .002
D        .COM  MASTCAT .003  D        .COM   MASTCAT .004
```

CAT2 lists the files in a single column. On the other hand, if a file was found on more than one disk, it lists the file only once with a list of the disks on which it was found. The listing looks like this:

```
++++7K  .FRE   MASTCAT .002
+++45K  .FRE   MASTCAT .004
+++55K  .FRE   MASTCAT .001
+++62K  .FRE   MASTCAT .003
CAT21   .ASM   MASTCAT .001
CATALL  .SUB   MASTCAT .002
CATALOG .DOC   MASTCAT .004
D       .COM   MASTCAT .001,    MASTCAT .002,    MASTCAT .003,
MASTCAT .004
```

LISTCAT.COM performs just about the same way that CAT2 does, but it prints out a neatly paginated list and allows you to enter a date which it picks up as part of a header that it puts on each page:

```
MASTER CATALOG AS OF December 22, 1984      Page 1
```

Of course, you can add more information than the date if you want to:

```
MASTER CATALOG AS OF 12-22-84 Ben's Files  Page 1
```

XCAT40.COM is similar to LISTCAT, but with a difference. If you use a disk name as well as a disk number for your system, you'll want to stock LISTCAT. XCAT40 prints only the disk number. XCAT40 offers the option to offset the printout by 0 to 9 spaces from the margin, to add tear-tabs if you use roll paper, to omit the free space listings, and to print only those pages you want. The last will be useful when you print out a 15 page catalog only to find that at page 12 the printer jammed. With XCAT40 you can tell the program to start printing with page 13.

XCAT40 also gives you a report at the end of the output that tells how many files and how many unique filenames were found in the MAST.CAT.

PUTCAT.COM gives a listing like CAT — two columns, alphabetized across, each file listed with its disk number as many times as it is found. Like LISTCAT and XCAT, PUTCAT gives a neatly paginated report with a header. In PUTCAT's case the header reads "CP/M Files as of".

CATPAGE also prepares a paginated report. It allows you to selectively list files on specific disks. You can also choose the exact title that you want at the top of the page. The syntax is as follows:

```
CATPAGE filename.ext diskname.### #P header text ↵
```

Wildcards are acceptable input for the filename or extension, and for the diskname and number. Any of the parameters can be omitted if not required. Entering `CATPAGE ↵` gets you a complete list of your MAST.CAT in two columns, displayed at the console only, with no header.

Enter the following:

```
CATPAGE *.* UTILITY.* #P Utility Files as of 12-22-84 ↵
```

This gets you a list of all files (*.*) on disks with names - UTILITY and any number (`UTILITY.*`), printed (`#P`), with a header at the top of each page saying "Utility Files as of 12-22-84". It will also say at the top of the page "*.* UTILITY.*", telling you the parameters applied to the MAST.CAT to generate the list.

Sorting Options, Epson Printers

CATXRF12.COM is a little different. It offers you some choices that aren't available with the other programs. I had some problems with it using my daisywheel printer. It's designed for use with an Epson MX80, and while the documentation indicates the only problems you should have are in attempting to get condensed print reports, I found that the horizontal tab feature was used and sent my printer off to the right edge of the platen to print tabbed material and then failed to advance the carriage on each succeeding line. If you have an Epson printer, especially an MX80, you may find this program quite nice. For others, it's not a big bother to send the output to a disk file (though you'll have to get it at the screen, too) and print it out.

CATXRF12 has a limit of 2000 files. If you've got more than 2,000 files in your MAST.CAT, CATXRF12 won't work.

The first thing CATXRF12 does is to tell you to mount the disk with MAST.CAT in the currently logged drive. It then gives you a report on the number of "records loaded", i.e., the number of listings in the MAST.CAT, how many you can add before exceeding CATXRF12's capacity, how many different extension types it found, and how many disks were included in the MAST.CAT. This is not printed as part of the report.

CATXRF12 then puts up a menu offering you the following choices:

```
1: Sort by disk number
2: Sort by file name
3: Sort by file extension
4: Run sort of all 3 options
^C — Exit to CP/M
```

A report sorted by disk number looks like this:

```
                    Listing —-> 001

+++55k  .FRE-001 ¦ CAT21   .ASM-001 ¦ D       .COM-001
MASCATFU.BAS-001 ¦ MCAT-41 .LBR-001 ¦ MCAT41  .COM-001
S       .COM-001 ¦ NEWQCAT .ASM-001 ¦ PUTCAT  .COM-001
```

A report listed by program name was neatly grouped (3 or six across) into sections by letter of the alphabet:

```
CAT      .COM-001 ¦ CAT21   .ASM-001 ¦

D        .COM-001

MASCATFU.BAS-001 ¦ MAST    .CAT-001 ¦ MCAT-43 .COM-002
MCAT-43 .COM-001 ¦ MEMORY  .FIL-003 ¦ MONSTER .PIC-003
MOTHER  .PIC-002 ¦ MYSTERY .BAS-004 ¦ MYY     .COM-007
```

A report by extension may not be useful to some users, but I leave that judgment to you. It looks something like the listing by disk:

```
                    Listing —-> BAS

ADAPT   .BAS-006 ¦ CAT21   .BAS-001 ¦ DS      .BAS-003
MASCATFU.BAS-003 ¦ MEMORY  .BAS-009 ¦ NUMBERS .BAS-004
SMART   .BAS-006 ¦ TATE1   .BAS-003 ¦ ZYMURGY .BAS-012
```

The final option is supposed to print all three reports without user intervention. I wasn't able to get it to work.

Keeping MAST.CAT Up-to-date

Of course, you do have to update the MAST.CAT from time to time to keep it useful. I've found that I can put about six to eight disks a minute through the process — as soon as the red light goes out at Drive B you can take the disk out and put another one in. Be ready to hit the Y key right away — the prompt to do so comes quickly!

Finding Files Without Printing

A print-out is a convenient way to find a file in your MAST.CAT. But if your MAST.CAT is big you might not want to print it out every time you update it. Of course, you could print it to the console with TYPE or one of the programs that prints out lists. Watching text that scrolls up the screen is not one of my favorite pastime, however, so I tend to use FIND51.COM, by Irv Hoff.

FIND locates a string of characters in your MAST.CAT and then displays the entire line in which the string is found. FIND actually can check any text file. It's not limited to use with MAST.CAT. You can toggle your printer on to get a printed list of all the places where the string or filename appears or make a disk file for editing or later printing, etc.

With FIND51 you specify the file to be checked as a parameter. If you omit the string to be searched for, FIND51 will prompt you for the string. FIND51 allows use of wild cards both in file names and in the string to be searched, so you can have more than one file checked with one command. You can have a search for more than one string at a time.

Using FIND51

To use FIND51 you enter FIND51, the name of the file that you want to search in, and the string that you want to find:

```
FIND51 d:filename.ext string ↵
```

(The *d:* is optional). In addition to the use of wildcards to give FIND51 more power, you have the following tools:

¦ A bar between strings allows you to search for alternative strings.

\ A backslash character at the beginning of a string "fakes" a carriage return so the string is found only if it appears at the beginning of the line.

`>filename.ext`
A "greater than" (>)sign followed by a filename, entered after the end of the string, sends the output to a disk file.

`[N]` As a parameter at the end of the command line, puts line numbers in.

Suppose you wanted to find all the file listings in your MAST.CAT of modem programs, and you knew that some of the names were MODEM something, but others were MDM something, and others were M7 something. On the other hand, we don't want any listings of XMODEM or other programs whose names contain the string MODEM but don't begin with it. Let's put the answer in a file called MODEMPRG.LST. Let's FIND51 them:

```
A>FIND51 B:MAST.CAT MDM¦\MODEM¦M7 >MODEMPRG.LST ↵
```

Let's parse the above example:

FIND51	Name of the program to run.
B:	Drive specifier.
MAST.CAT	Name of file to be checked.
MDM	First string to be searched,
¦	or,
\MODEM	second string to be searched, but must be at the beginning of a line,
¦	or,
M7	third string to be searched.
>	Output the results to a file.
MODEMPRG.LST	Name of the file with the results.
↵	Carriage return causes execution of the command line.

Here's your file MODEMPRG.LST:

```
MODEM712.COM,COMM.001
MDM740.COM,COMM.002
M7LIB.COM,COMM.010
```

(If you've given some of your disks the names - MODEM.###, you're in trouble here!)

Yet Another Catalog Program

You may remember that with all the modem programs in the public domain we finally got YAM — Yet Another Modem program. Well, there may not be as many programs in the catalog area, but there is Yet ANother CATalog program — YANCAT. Actually, YANCAT is in version 2.3, so it's YANCAT23.LBR that you'll find on the RCPMs.

YANCAT is was started by Ken Presser, and updated by "a cast of thousands", according to the notice from Paul M. Sittler, the most recent revisor. YANCAT is an attempt to put all of the MAST.CAT programs into one bundle that is menu driven and self-documenting, so that you can get all the functions from a single source.

File Sizes & User Areas: Two YANCAT Bonuses!

For those who don't like menu driven software and already know how the whole MAST.CAT series goes together, YANCAT has two features that will tempt you in spite of its deficiencies: YANCAT tells you how big each file in the MAST.CAT is and lists the user area where it is found. The latter won't sound like much to many users, but for those who use user areas, it will be a boon to be able to know from the MAST.CAT which user area each file is in.

Using YANCAT

YANCAT is 33K bytes, all by itself. You also have to have a terminal overlay on the disk with YANCAT, another 1K bytes. This disk space is the price you pay for having one file rather than a bunch of files for each separate function.

To use YANCAT you simply enter `YANCAT`↵. YANCAT comes up with an opening screen offering help. If the offer for help is accepted, a series of screens follow giving short explanations of the operation of YANCAT. Since you've read what goes before in this article, you already understand the principles behind the operation, so we'll skip the help and go directly to the opening menu.

At the top of the menu are three status lines that tell you the basic operating parameters:

```
Master Catalog System defaults d:
Master Catalog on drive A:  Printer
Update disk on drive B:     now OFF
```

YANCAT's opening menu offers the following choices:

```
1) Create a new Master Catalog file
2) Create new disk volume label
3) Update the Master Catalog
   using the default settings above
4) Find specific file(s) with a match key
5) List a volume from the Master Catalog
6) List the entire Master Catalog
7) List the disk directory
8) Update the above defaults
x) eXit        ?) Help
Enter your selection (1-8, x, ?, or RETURN):
```

YANCAT does away with the need for creating a MAST.CAT file with an editor — when you enter `1`↵ YANCAT prompts you that there is an existing MAST.CAT if there is one. If there is no existing MAST.CAT, YANCAT offers you the opportunity to enter "ignore" filenames. When you are done entering "ignore" filenames, you simply hit Return to return to the main menu.

YANCAT eliminates the need to put disk names, volume labels as they are called by YANCAT, on your disks before you start your cataloguing session: select menu choice 2 and YANCAT prompts you for a disk name. It won't let you enter one that doesn't start with a hyphen.

Updating the Master Catalog

When running MCAT41 the process of updating the MAST.CAT is very quick — just about as fast as you can swap disks in drive B MCAT41 updates the MAST.CAT. I timed updates using MCAT41 and YANCAT on the same 15 disks, starting with the same MAST.CAT. It took 138 seconds with MCAT41 — under 10 seconds a disk. YANCAT took 329 seconds, nearly 22 seconds a disk. YANCAT is slow at updating disks, but provides a bonus of more information for that slowness — user areas and file sizes.

When MCAT41 prompts you for a new disk to catalog, entry of a simply `Y` gets the program running again. With YANCAT you have to hit Return to get back to the main menu, Return again to get to the update menu, and Return a third time to tell YANCAT that the disk is ready for updating the MAST.CAT. I'm dropping Paul M. Sittler a note suggesting that YANCAT would run much faster if at the end of updating a disk there was a prompt "Another disk ready for updating in drive B?" and a direct step to updating without the extra screen refreshing that return to the main menu requires.

YANCAT Reports

YANCAT provides a multitude of reports that ought to please just about anyone, and they seem to work very quickly. Main menu option 4 allows you to find a specific file or files in the MAST.CAT, using standard CP/M wild cards. It

worked like a charm.

Main menu option 5 allows you to list a the files from a single disk, or, using wild cards, a group of disks. FIND51 does the same thing. Both are extremely useful if you use names in addition to numbers for your disks. You can get a list of all the files in all the UTILITY disks, separate from the complete MAST.CAT listing. If a disk is trashed and you can't read the directory, both YANCAT and FIND51 will quickly tell you exactly what files were on it. YANCAT won't output the information to a file, but you can print it out.

Main menu option 6 lists the entire MAST.CAT.

YANCAT reports have more information than reports from MAST.CAT files created with MCAT41, but the general format is about the same. YANCAT always prints the name part of the disk identifier, as well as the number. If the printer settings allow two columns (see below), alphabetizing is across the two columns. YANCAT prints a listing for each file every time it appears, no printing out a filename with all of its locations next to it as some of the programs used with the MAST.CATs created with MCAT41 do.

Interestingly, the MAST.CAT created by YANCAT lists the user area and file size after the other attributes of a file with the result that the various reporting utilities print out a report from a YANCAT created MAST.CAT just the same way as with a MAST.CAT created by MCAT41.

Here's a sample of a typical YANCAT report on the complete MAST.CAT:

```
     NAME            DISK            SIZE
0:++++7k   .FRE      MASTCAT.002      0K
0:+++55k   .FRE      MASTCAT.001      0K
0:-MASTCAT.001       MASTCAT.001      0K
0:-MASTCAT.002       MASTCAT.002      0K
0:CAT21    .ASM      MASTCAT.001      8K
1:CATALOG  .DOC      MASTCAT.004      8K
1:CATEVERY.DOC       MASTCAT.004      9K
0:YANC-23  .COM      MASTCAT.001     33K
```

When YANCAT's printer settings allow printing of a report in two columns, a bar divides the two columns.

Disk Directory

At first the disk directory function in YANCAT seems to be superfluous. If all you want to do is to check the names and sizes of files, there are plenty of Super Directory programs around that are faster than YANCAT. The YANCAT help menu points that out. But when you are in the midst of a cataloguing session, it would be nice to be able to check a directory to see what's on a disk to help decide whether this disk belongs in this particular MAST.CAT.

Printer Set Up & Drive Choices

Main menu choice 8, `Update the above defaults`, refers to the choices at the top of the main menu: where the MAST.CAT is, where the disks to be updated go, and whether the printer is on or off. You can have the MAST.CAT in either drive, and update disks in either drive. Selecting menu choice 8 allows you to change the choices.

Changing the default for the printer decides whether your reports will be printed. If you're selecting menu option 4, 5, or 6 for a report, menu option 8 is the one you check into first if you want to turn the printer on. In addition to turning the printer on and off, you can change the page length (listed in lines) and the page width (listed in characters). If you make the page width less than the 73 characters necessary to print reports in two columns, YANCAT will print your reports in a single column.

The choice of the term "defaults" is a poor one — "settings" would be better. Default usually means what the settings are if you don't choose any. YANCAT has default defaults! YANCAT's defaults are merely the current settings. Since you don't have an opportunity to change the defaults when you make a menu selection — other than menu choice 8 — they aren't really just what will happen if you don't make any other choice. They are the settings you've selected, and there are default settings in case you don't make any changes.

On-line Help

When the YANCAT main menu comes up the default selection is 3, update the MAST.CAT. That is, the cursor location is already filled with a 3. You simply hit Return if you want to update the MAST.CAT. If you want any other function, you must enter the number and then hit Return.

To get help with any function, simply enter the number followed by a question mark (?) and a Return. The help screen or screens for that function will appear.

There's More?

You'll note that we haven't mentioned ".LBR" files (library files) in connection with MCAT41 or YANCAT. That means that when you have a bunch of member files in a ".LBR" file, you won't have the members listed in your MAST.CAT, whether you use MCAT41 or YANCAT. That may be just hunky-dory with you, but there are some folks out there who want both.

Well, of course there are programs in the public domain that do it — not very well, unfortunately, and some of them still have bugs. I've run across CATEVERY.LBR, CAT.LBR, and LIBCAT10.LBR, three efforts to get ".LBR" members listed in a MAST.CAT. There are a number of problems — each requires multiple steps to update the MAST.CAT listings to include library files' member files. The format for the MAST.CAT lists only the name of the member and the library file in which it is found. The library file name takes the place of the disk identifier or volume name. When you've found the name of the library file the member file is in, you still have to look up the library file to

determine what disk it is on.

I haven't reviewed these programs. I'm hoping that at some time in the future I'll see a note indicating that they are mature and useful, and that I'll find they are easy to use and bug-free. Until then, I'll stick with MCAT41 or YANCAT, thank you, and not worry about locating members of library files by their individual member names.

Short Subject: HP.COM

Have you ever wanted a Hewlett-Packard calculator? Have you ever thought you'd like to try out Reverse Polish Notation? Here's a handy little calculator program that emulates the Hewlett-Packard calculators with Reverse Polish Notation.

Next Installment

Next issue I plan to cover a variety of small utility programs that help to make life a bit easier. None of these would fill a normal column, and some of them deserve more than a passing note. I won't cover any that have been previously covered in User's Guide. If you've got a favorite that you think should be included, send me a note at the address below. If there's a program or group of programs that you'd like to see addressed in this column, write about that, too. I haven't time to respond to every letter, but all suggestions are appreciated.

Getting the Software Mentioned in This Column

You can get a disk with the programs discussed in each column that I write. At the end of the column I list the programs. You send a check for $6.00 to me, **Benjamin H. Cohen**, at **Box 1674, Chicago, IL 60690.** A return address label would be nice.

Specify the format, please. If it's Osborne 1 SD or DD, TRS-80 with CP/M (specify model), Xerox 820 SD or DD, Actrix, Morrow MD-2, Kaypro, Zenith Z90, Heath Z100 CP/M, Heath with Magnolia, TI Professional, IBM-PC CP/M, or IBM-PC PC-DOS format, I'll make up the disk and ship it back to you promptly. For other formats, I have arrangements with a reader of this column who has a Disk Maker® which handles 170 formats, including 8" formats, so you'll have to wait just a little longer. The price, however, will be the same. Please don't ask for Apple format disks or for any hard sector formats — we don't have facilities to make them. (On the other hand, if anyone has Apple CP/M and also a computer with one of the formats listed above, and would be interested in making Apple formats available, drop me a note!)

No warranty is made that particular programs will run on particular computers. YANCAT requires a terminal definition file. I furnish all the terminal definition files found in YANCAT.LBR. If yours isn't listed specially, there's a file that you can customize so your terminal should work. The commonest computers are specifically covered.

This Issue's Disks

This month we covered a lot of programs. They take up a lot of disk space! You're going to have to put up with ".LBR" (library) files in some instances — it just isn't practical in any other way. HP.LBR will be included with every order.

If you don't have a copy of the Library Utility program, LU301.COM is available along with LU300.DQC. (The only change from LU300 to LU301 is CP/M+ compatibility.) This issue contains a tutorial on using LU300, and also a tutorial on un-squeezing files using NSWP or the Squeezer utilities. Bob Wolff also wrote a tutorial on NSWP in issue #10. As a special bonus I'll include NSWP207.COM, NSWP2.WS, its extensive documentation file, and DISK77B.COM.

Please specify which disk you want and what format.

```
DISK #1  -- Master Catalog Series 92K
MCAT-43 .DOC  8K   CATXRF12.COM  6K
MCAT-43 .COM  8K   CATXRF12.DOC  6K
CAT     .COM  1K   LISTCAT .COM 17K
CAT2    .COM  1K   LISTCAT .DOC  2K
CATPAGE .LBR  8K   XCAT40  .COM  3K
PUTCAT  .COM 19K   XCAT40  .DOC  4K
NULL    .AQM  2K   FIND51  .LBR  8K

DISK #2 -- Library and Disk Utility -- 83K
LU301   .COM 20K   NSWP207 .COM 11K
LU300   .DOC 22K   NSWP2   .WS  26K
DISK77B .COM  4K

DISK #3  -- YANCAT  -- 88K
YANCAT  .LBR 88K

DISK #4 Special Library Catalog Programs -- 96K
CATEVERY.LBR 96K

DISK #5 Special Library Catalog Programs -- 106K
CATLBR  .LBR 34K   LIBCAT10.LBR 72K
```

I know that some of these groups of files will fit on one disk together on some disk formats. You may in fact receive them that way — there's no difference in the charge because the biggest part of the fee covers the time and wear and tear on the computer to make all the copies; disks are cheap. The simple fact is that different systems have different disk capacities. Osborne 1 SD is 90K, some are 156K or so, others are 193K. Obviously, I can't provide a disk with more on it than your system will hold.

Osborne 1 SD users — no extra charge even if the files exceed your 90K disk capacity! My first (and current) computer was an Osborne 1 single density 52 column model — now

it's double density and 52/80/104 columns, so I've got a soft spot for the SD folk!

Why No Mention of NULU, LSWEEP or DE-LBR As Promised

Last issue I said that I was going to talk about the library utility or LU series of programs by Gary P. Novosielski, and about NULU, the new library utility program, by Martin Murray, along with some related programs, LSWEEP and DE-LBR. These programs help to reduce the amount of space that a group of related programs take up on a disk, put the group of programs together so that no matter how unrelated the names may seem they will all be found in one place, and facilitate the uploading and downloading of groups of files by telephone.

Library files are explained in detail in a tutorial in this issue. In short, a file with the extension ".LBR" is created which consists of a number of files called "members." Members may be any type of file, including squeezed files, another method of saving space. For a long time the program to use to create library files, or to get the members out of a library file so that you can use them, was Gary P. Novosielski's LU300 (*see tutorial this issue*).

Along came Martin Murray, and in the fine tradition of public domain software, created a new version of the LU series, called NULU, which makes operation of the library utility series much easier by incorporating the filesweep type of operation seen in SWEEP and NSWP (see issue #10 for a tutorial on NSWP).

Unfortunately there is a *big problem* with NULU, which I hope will be corrected, and I have chosen to defer writing at length about the library utility series until that situation is cleared up.

The Problem With NULU

With version 2.20 (LU220.COM) Novosielski introduced a CRC (cyclical redundancy check) into the LU series. CRC is a method of insuring that the copy of a file created by any method of transfer is identical to the original. It's used with PIP.COM if you use the `[V]` parameter (or automatically if you have a version of PIP patched to do it). It is also used with NSWP if you add a `V` after the drive specifier with the `M` option or after the filename with the `C` option. It is also used with modem programs such as MDM740, etc.

LU300 similarly does a CRC for each member of a library file and for the directory of the library file every time you add a file to the library or extract one.

However, NULU does not maintain the CRC information in a library file, and in fact changes the CRC entry created by LU300 to zero the first chance that it gets. The result is that the first time NULU gets its hands on a library file, your chance to confirm (that the files you extracted are exact copies of the member files) goes down the drain.

The Importance of CRC

How important is the CRC maintained by LU? I put the question to Ward Christensen, creator of the MODEM series and of the first computerized bulletin board system, CBBS#1, in operation since February 16, 1978. (No, I'm not an old buddy of Ward's, I just dialed CBBS#1, 312-545-8086, and left a message for him. His response was up in a matter of a few days.) Here's Ward's response, slightly edited:

"If you are getting a library file from an unknown source, wouldn't *you* like to know, automatically, if a glitch happened somewhere along the line? I've seen *too many* programs in the public domain that just don't seem to work — and sometimes it is likely due to someone along the way having a faulty disk, memory location, or whatever — and the CRC option being kept within LU is a way around this.

"By way of precedent: USQ has always had a CRC in it, and yes, on occasion, I've seen it not coming out OK, meaning I in fact had a corrupted copy of the squeezed file — you better believe I was happy for the existence of the CRC.

LSWEEP and DE-LBR

In addition to LU and NULU, there are two programs called LSWEEP and DE-LBR (sometimes seen without the hyphen as DELBR) that are designed simply to remove members from library files. They would be easy to use for this operation, but they don't do the CRC, either. Since LU is generally faster and is easy to use, there's no reason to use either LSWEEP or DE-LBR. Avoid them, too.

While Waiting For Software Doctor...

Until someone puts CRC into NULU, I recommend that you stick to using Gary Novosielski's LU300.COM. It's actually easy to use, especially if all you want to do is extract members from library files. See the tutorial article in this issue.

For those who want LU300.COM and LU.DOC, see the information about the distribution disk.

You'll need two or three disks to extract files from libraries. One disk has LU300.COM on it. A second disk has your library file on it. You can put the library file and LU300 on the same disk, if you want to. A third disk has nothing on it except the CP/M system. Put the third disk in drive A and boot the system. Make sure that you know the names of the library files (usually with ".LBR" extension) that you want to get members from. If you're not sure of the exact name, put the disks in drive B now and use DIR to make sure. Next put the disk with LU300 in drive B.

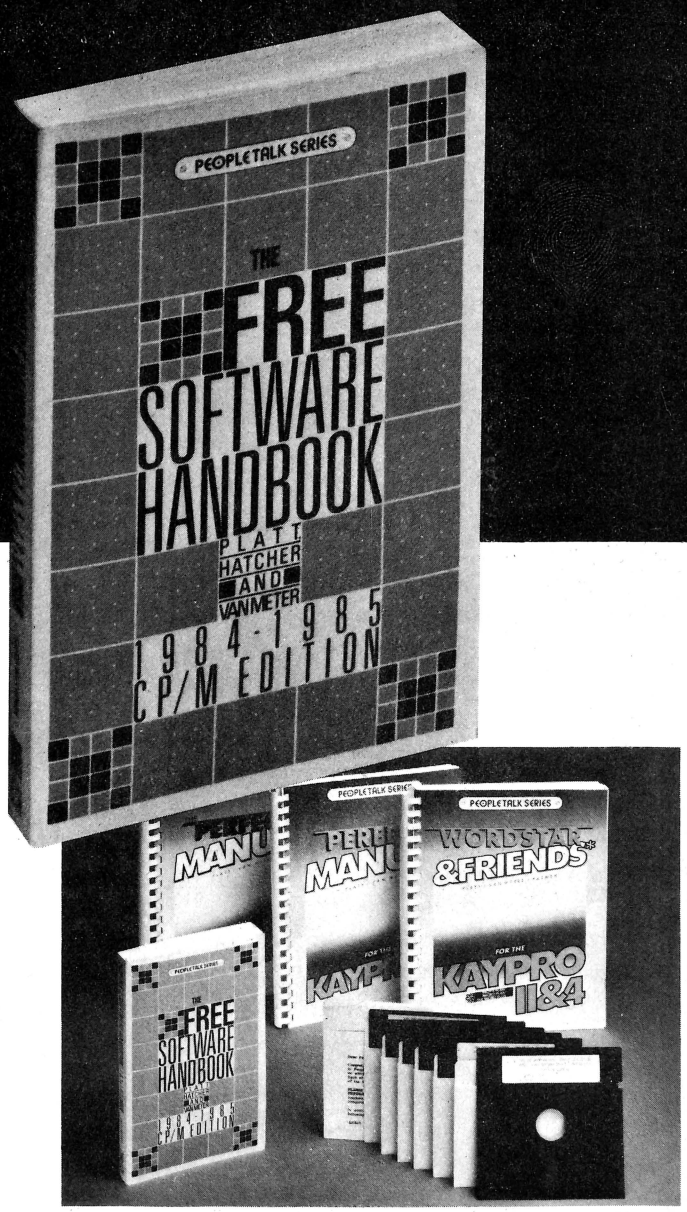
Now follow the instructions in the tutorial. Good luck!

"...the very best collection of utility software I've seen...The Kaypro is advertised as "The Compleat Computer"—but this is the bundle of software that makes that true!"

Dave Gerrold, Profiles Magazine

"After using your "Help" books, I am hesitant to purchase any software without checking to see if you have published a book on it."

Houston, Tx.



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Thanks for filling out the questionaire on the card. This feedback helps us plot an editorial course, and the answers provide demographic information to media planners. The more responses this magazine can generate, the more it can grow in pages and in product coverage. We appreciate your support.

The press announcements in this section have not been checked for accuracy, and we cannot verify that the products are available at this time. In most cases we do not have the products in-house, and they have not yet been reviewed in this magazine. Therefore, take claims of product features and benefits with a "grain of salt."

Software

Rags to Riches

The Rags to Riches series of small business accounting software is now available through Chang Laboratories for both the entire KayPro product line and the Epson Geneva and the Epson QX-10.

Rags to Riches is a set of four accounting packages, Ledger, Receivables, Payables and Sales, which are sold separately at $99.95 each. Rags to Riches is ideal for businesses with fewer than twenty employees, self-employed business people, home businesses, consulting businesses and professionals.

The Rags to Riches packages use the double-entry accounting method, and the command structure is consistent throughout the packages. Over thirty templates for different businesses are included on the Ledger and Sales disks, to customize the software for the user's application. The "Open Architecture" structure allows expansion and compatibility with other popular accounting and productivity software. There are special features such as expense reporting and sales quoting for the Epson Geneva.

For more information contact, Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95129-1088. (408)-246-8020.

Circle 55 on your reader service card.

Synonym Finder

Writing Consultants announces Synonym Finder, a computerized thesaurus for WordStar, Multimate, and other word processors. The program integrates itself within the word processor, and is simple to use. You simply put the cursor at the word, and enter two keystrokes, and you are given a selection of synonyms. The words are displayed in a window automatically positioned to allow you to select the alternate word while viewing the section of text for which it is being considered. You can then select a new word, and the old word is deleted and replaced with the new. The thesaurus database contains almost 90,000 words. Over 9,000 keywords call up an average of 10 synonyms each (with some words yielding over 50 synonyms).

The program is available for MS-DOS, PC-DOS, and CP/M-80 for WordStar versions 3.0 through 3.3, and for MS-DOS and PC-DOS versions of Multimate. Synonym Finder sells for $129.95 (plus 2.50 shipping), and is available from Writing Consultants, 11 Creek Bend Drive, Fairport, NY 14450. (716)-377-0130.

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Transfer Files

Uniform-PC software from Micro Solutions, Inc. offers new levels of compatibility for businesses that use a mixture of 16-bit IBM PC, PC-XT, PC-AT or compatibles, and 8-bit or 16-bit CP/M micros. With UniForm-PC, an IBM user can utilize the data disks from any of more than 80 CP/M computers.

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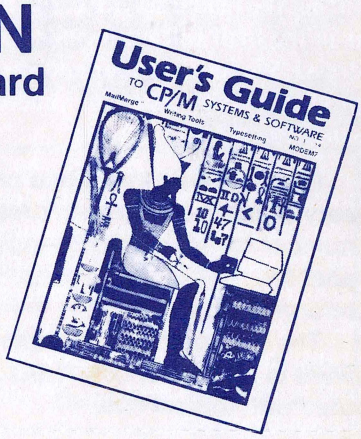

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2.☐ Semi-intermediate 4.☐ Advanced

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2.☐ Small bus. owner 4. ☐ Other

C. Use which computer(s)?
a. ☐ Apple b. ☐ IBM PC
c. ☐ CompuPro d. ☐ DEC
e. ☐ Osborne f. ☐ S-100
g. ☐ Radio Shack h. ☐ Heath/Zenith
i. ☐ TeleVideo j. ☐ Sanyo
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o. ☐ _____ p. ☐ PC-compat.

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3. ☐ School/training 7. ☐ Corporation
4. ☐ Construction 8. Other: _____

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2. ☐ Upgrading system performance
3. ☐ Using information/communications services
4. ☐ Supplies and accessories

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UG 13

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B. Occupation?
1.☐ Executive/manager 3.☐ Professional
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c. ☐ CompuPro d. ☐ DEC
e. ☐ Osborne f. ☐ S-100
g. ☐ Radio Shack h. ☐ Heath/Zenith
i. ☐ TeleVideo j. ☐ Sanyo
k. ☐ Kaypro l. ☐ Compaq
m. ☐ Morrow n. ☐ Columbia
o. ☐ _____ p. ☐ PC-compat.

D. Interested in which software?
a. ☐ Word processing b. ☐ Accounting
c. ☐ Communications d. ☐ Data base mgmt.
e. ☐ Medical/Dental f. ☐ Financial planning
g. ☐ Other vertical h. ☐ Scientific

E. Interested in which products?
a. ☐ Printers b. ☐ Modems
c. ☐ Hard disks d. ☐ Publications
e. ☐ Information services f. Other: _____

F. Where do you use your computer?
1. ☐ Small business 5. ☐ Medium business
2. ☐ Profession 6. ☐ Home
3. ☐ School/training 7. ☐ Corporation
4. ☐ Construction 8. Other: _____

G. Your immediate need?
1. ☐ Adding peripherals to present system
2. ☐ Upgrading system performance
3. ☐ Using information/communications services
4. ☐ Supplies and accessories

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This program transforms one of the floppy disk drives of an IBM PC or AT into a CP/M drive to read, write, copy, and format data disks, as well as copying data from the IBM disk to the CP/M disk.

This utility program provides 100% compatibility between IBM PC-DOS software programs and 8-bit or 16-bit CP/M data disks. This means that users who own both IBM PC's and CP/M micros can interchange and use data disks without major added expense. Both standard ASCII and other data files can be moved between operating systems, without altering the integrity of the file. UniForm PC is menu driven, with prompts, an on-line help facility, and a system for checking certain kinds of problems such as formatting problems.

The program supports a wide variety of disk formats and sizes, including 96 TPI or 48 TPI disk drives. When used with the appropriate disk controller, either 5¹/₄" or 8" floppy disks may be used.

The program runs on the IBM PC, PC-XT, PC-AT or 100% compatible computers under PC DOS version 2.0 or higher. Recommended memory is 128K, although UniForm PC requires less than 24K of RAM space. Access to two floppy disks or one hard disk and one floppy is required.

Micro Solutions also offers UniForm CP/M, a similar product for use with 8-bit CP/M machines, available in more than 10 different machine-specific versions.

Uniform PC retails for $69.95. For more information contact, Micro Solutions, 125 South Fourth Street, DeKalb, IL 60115. (815)-756-3411.

Circle 58 on your reader service card.

Archiving

Generic Software is offering a new software product called Archive. Archive solves the problem of keeping related files under one title and allowing immediate access to any of its contents. Archive allows groups of files to be saved in one file with a significant savings in disk space. In addition, Archive allows the user to create an archive file whose contents can be listed, updated, appended, extracted and deleted.

With Archive, files can be time and date stamped when placed in an archive, and comments about the file can also be added. Binary files as well as text files can be archived. Wildcard names for files are supported. Special header and trailer records in the archive file can be made to look like comment lines for any high-level language, thus allowing the archive file to be compiled.

Archive 80 requires a CP/M-80 2.2 system, and will run on any 8080 or Z80 CPU with 32K RAM, and is available for $29.95. Archive 86 requires an MS-DOS, PC-DOS, or Z-DOS system and will run on any 8086 or 8088 CPU with 64K RAM and is available for $34.95.

For more information contact, Generic Software, P.O. Box 790, Marquette, MI. 49855. (906)-249-9801.

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Tax Preparation

Vision Information Products , Inc. announces the release of TaxVision, an income analysis and preparation package for users of Microsoft's Multiplan.

TaxVision is an integrated set of templates that works with Multiplan. Each template represents an IRS form or schedule that prints in a format ap-

ACTIVE TRACE

"Software that lives up to its promises. *When a Basic program doesn't work the way you want it to, this package. . . will help you track the problem down. . . Scope is a tool for the beginning, advanced, or professional programmer, and it begins where the cross reference maps leave off."*

Howard Glosser, *Softalk for the IBM Personal Computer* July '84, pp 120-121

"Extremely useful program. . . *Anyone doing much programming in Basic should appreciate Active Trace a lot."*

Jerry Pournelle, *Byte Magazine* April '83, p 234

"A marvelous Basic programming aid. . . *It's just amazing to watch a program you wrote run under Scope, and debugging becomes if not trivial, then at least doable"*

Thomas Bonoma, *Microcomputing*, Dec. '83, p 22

". . . a really neat utility. . . *designed to untangle even the most convoluted Basic program. . . . The documentation is almost worth the price of the package."*

Susan Glinert-Cole, *Creative Computing*, July '84, p 210

Active Trace will lead you through your program letting you know variable values (all variables or just those you specify) as they change. Your program's internal activity is presented on your screen, or printer, or it can be saved on disk. **It's simple, effective and works with the BASIC you already own.**

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Active Trace is available for most **MS-DOS** and **CPM 2.2** systems and supports the special features of Brand specific versions of Microsoft Basic such as **Basica** on the **IBM-PC**.

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proved and accepted by the IRS. All you have to do is "fill in the blanks" with data and TaxVision calculates and displays the results of your entries.

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TaxVision will run on the Apple II/III series and compatibles (CP/M or DOS), IBM PC, compatibles and the PC jr., TRS-80, Commodore 64, and most CP/M machines, including standard 8-inch CP/M.

For more information contact, Vision Information Products, 5500 Atherton Street, Suite 306, Long Beach, CA 90815. (213)-431-5284.

Circle 61 on your reader service card.

Retrieve Information

Telion Software announces Free Filer a "free form" text retrieval program. Free Filer can retrieve information from existing text files without modifying them. It can be used for such things as compiling address lists, cataloguing, filing, or managing correspondence. It divides the disk into parcels of information, much like index cards. It will segment your text files into paragraph parcels automatically, or you can specify the data parcel you require. It can then sort, print, merge, and search through them, and it is fast. It can go through a 55K file in less than 25 seconds.

For more information contact, Telion Software, P.O. Box 1464, La Mirada, CA 90637-1464. (714)-994-5135.

Circle 62 on your reader service card.

Apple-IBM Transfers

Vertex Systems announces the "Apple Turnover" — a unique, low cost board for the IBM PC allowing direct transfer of files between Apple disks and IBM disks. The file copying process is fast and simple. The Apple CP/M disk, or Apple-DOS 3.3 disk is directly inserted into the IBM's disk drive. Individual Apple or IBM disk files, or an entire disk, can be quickly and easily copied. In addition, blank disks can be initialized within the IBM for the Apple. Serial-file transfers and modems are eliminated. The Apple-Turnover software is fully menu-driven and easy to use.

The package contains a half-size printed circuit board, disk drive attachment cable, file-transfer software, and a test disk. The Apple-Turnover board can be installed in any expansion slot, between the regular disk controller card and the normal IBM disk drives.

Apple-Turnover will run on the IBM-PC, XT and most PC-compatible computers under MS-DOS. 128K of memory, and two disk drives are required (most hard disk systems supported). The price of this board is $279.50.

For more information contact Vertex Systems, 6022 W. Pico Blvd., Suite 3, Los Angeles, CA 90048. (213) 938-0857.

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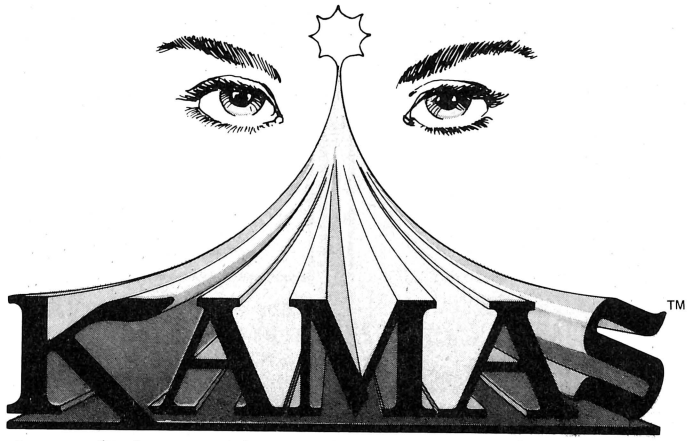

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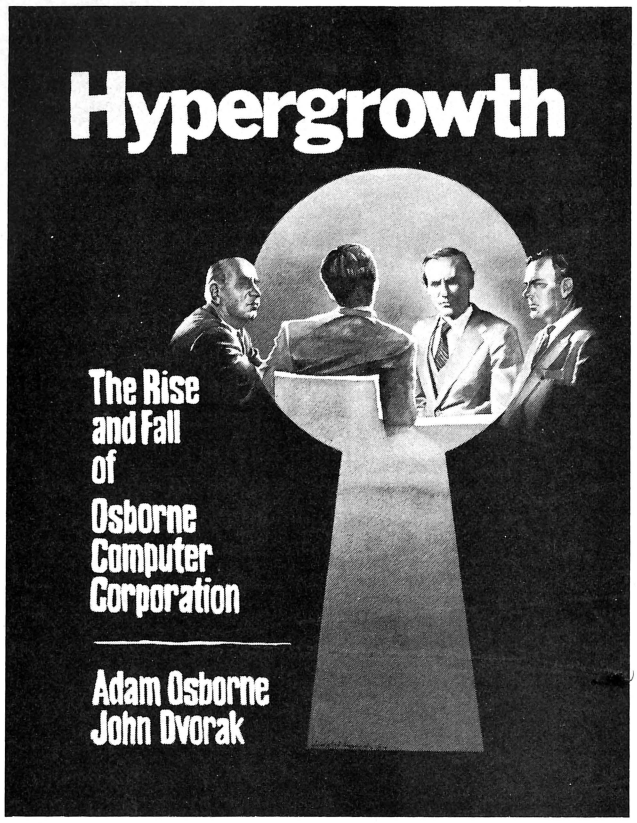

What really happened?

If you thought there was more to the Osborne Computer Corporation's bankruptcy than got reported. . . you were right.

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"At Osborne Computer Corporation one of the keys to success was a certain "Us vs. Them" mentality that the company used in its dealings with the outside world. Unfortunately the "Us vs. Them" mentality was a projection of the "Me vs. You" competitiveness that was rampant throughout the company. Interviewing ex-Osborne employees reminded me of the classic old Nast cartoon depicting the Tammany Hall gang. Everyone was pointing a finger at everyone else until a circle was completed creating an infinite loop of accusation.

So we took one perspective — Adam Osborne's. His perspective was the most interesting, the most entertaining and the most complete. This is his story.

Osborne Computer Corporation was the fastest growing company Silicon Valley had ever seen. It shipped its first computers in July of 1981... In its first full fiscal year ending February of 1983 net revenues reached one hundred million dollars... Six months later the company filed for bankruptcy amid a roar of publicity that turned the bankruptcy filing into a newsworthy event of nationwide, even worldwide proportions."

Circle 11 on your reader service card.

Billing for Rentals

Arctic Data Corporation announces a new addition to its line of industry-related software, Equipment Rental Billing System. It is designed for companies renting equipment and/or providing services which are billed for on a recurring basis.

The menu-driven system supports multiple billing periods, and can be used for both equipment and service billing concurrently. It maintains complete equipment identification data, and each unit can be designated as rented, in stock or out of stock. Billing can be via customer, purchase order or both, with different shipping and billing addresses. Reporting is available by equipment model or customer number. There is complete accounts receivable reporting with statements, aged trial balance, alphabetical customer lists, an aged accounts receivable report, and transaction listings. This package is also available with accounts payable, general ledger, and payroll.

For more information, contact Arctic Data Corporation, 1839 1st Avenue, Price George, B.C. CANADA V2L 2Y8, phone (604) 562-5240.

Circle 64 on your reader service card.

Networks

Kaypro Network

Adevco, Inc. announces that they are bringing their popular "Web" Local Area Network system for the Kaypro computer to California. This Kaypro model is priced at $350 (single unit price) and includes hardware, software, training, and full ninety day warranty. Later this year, Adevco will introduce "Web" versions for the Epson QX-10, and the Xerox 820-11 computers.

For more information, contact Adevco Inc., 3790 El Camino Real, Suite 329, Palo Alto, CA 94306. (415) 493-7466.

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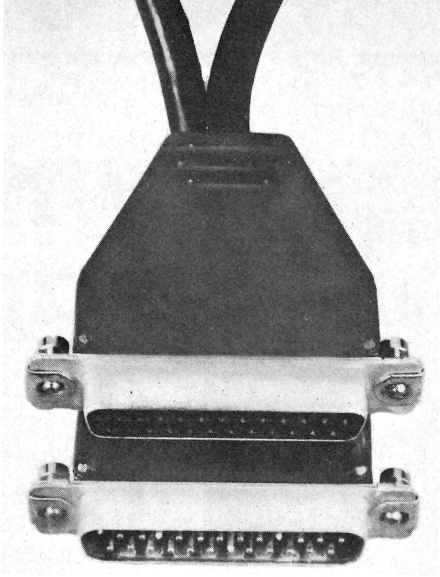


Molded cable assembly from Storm Products.

Accessories

Cable Assembly

Storm Products Company is offering a new molded computer cable assembly featuring RS232C and RS449 connections. The RS232C is available in 9, 15, and 25 pin sizes, while the RS449 features 36 and 50 pin positions. Any of the RS232C or RS449 connections can be molded with the user's choice of cable; plenum, low capacitance/ twisted pair plus 100% shielding and standard shielded and unshielded general purpose cables. Standard lengths are 3, 8, 12, 18, 25, 50 and 100 feet. Available in male or female, connector pins and sockets feature 30 microinch gold over beryllium copper.

To obtain a copy of the new Storm catalog, or for more information, contact: Storm Products Company, 3047 N. 31st Avenue, Phoenix, AZ 85017. (602) 269-3485.

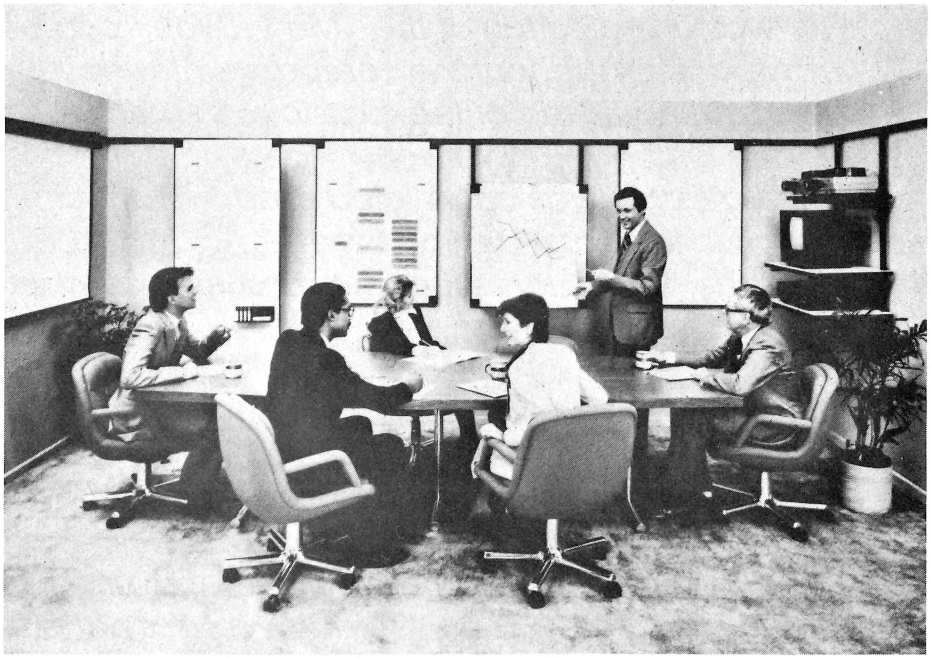
Circle 79 on your reader service card.

Modular Furniture

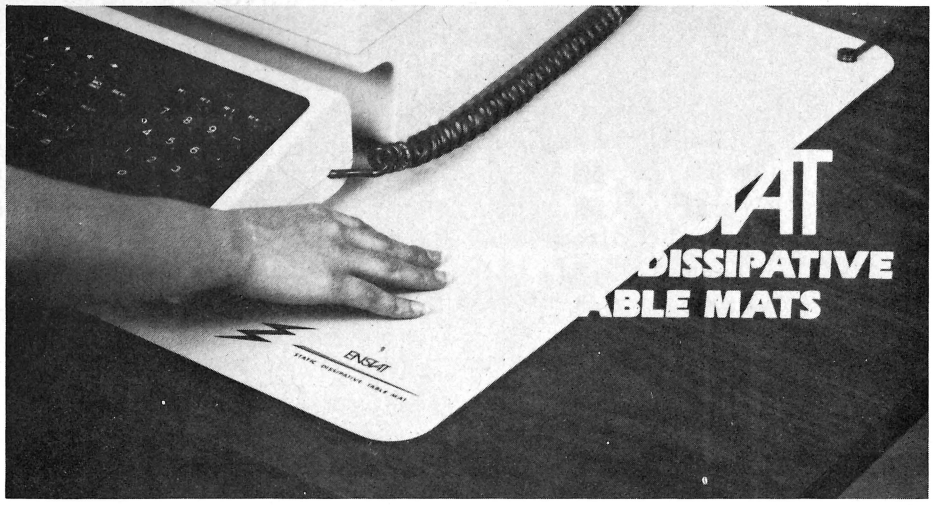
Bretford announces a new idea in office furniture, Walltrak's. Walltrak is a system of modular wall furniture that hangs on the walls from strips of track. The units — dry erase bulletin boards, flip chart easels, wardrobes, shelving systems and projection screens take wasted wall space, and turn it into working space. This system also offers flexibility in that these units can be interchanged easily, quickly, and without complicated instructions.

For more information, contact Bretford Manufacturing Inc., 9715 Soreng Avenue, Schiller Park, IL 60176 (312) 678-2545.

Circle 80 on your reader service card.



The Walltrak system of office furniture from Bretford Manufacturing, Inc.



Static Mat

Semtronics Corp., introduces the ENSTAT Static Dissipative Table Mat. This mat is made to be placed under electronic equipment such as computers, to avoid static shocks to equipment. A 10 foot specially designed cable connects the Enstat Mat to a safe ground so that when any portion of the mat is touched, static is quickly and safely drained away. The mats come in three sizes, 12" by 18", 18" by 24", and 24" by 26", in three designer colors: beige, blue, and dark brown. The mats function in all temperature and humidity conditions.

The retail price is $42.95 each. For more information contact, Semtronics Corp., P.O. Box 599, Scotch Plains, NJ 07076.

Circle 83 on your reader service card.

Printers

RITEMAN Computer Printers announces the family of RITEMAN printers. All have a rugged steel cable print head, compact self-contained ribbon cartridge, use 9 X 9 dot-matrix print, can be either friction or pin fed, and have a one year warranty on parts and labor. Another feature is that the dip switches are easily accessible from the outside panel. All printers print bi-directionally, and are logic seeking.

The first in the family is the RITEMAN PLUS which costs $399. It prints 120 cps and is software com-

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T. Bove & C. Rhodes, USER'S GUIDE No. 11

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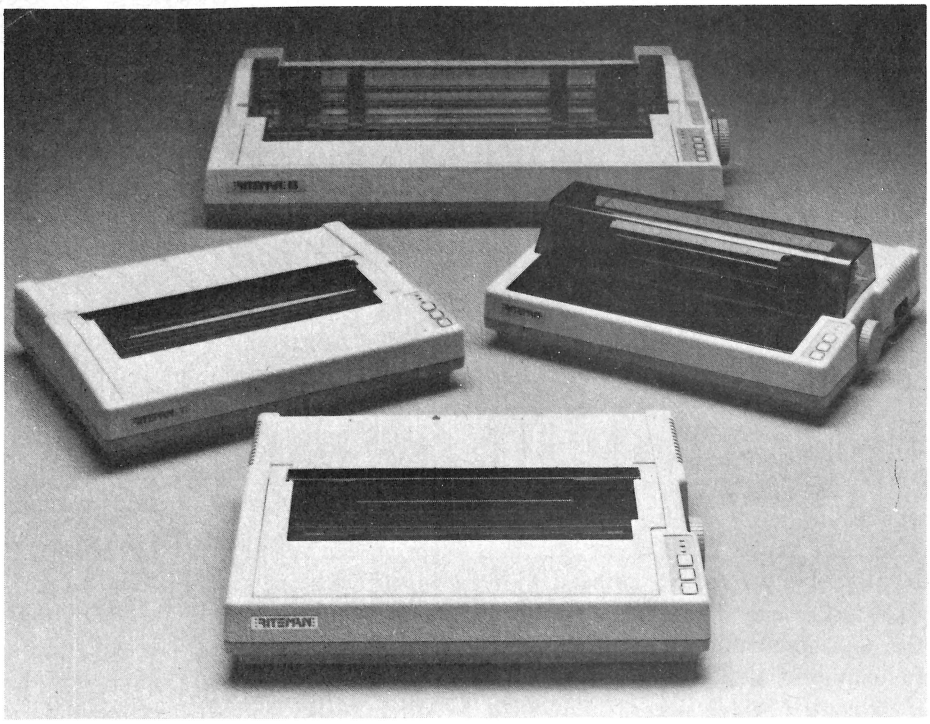


RITEMAN family of printers.

patible with the Epson MX-80FT GrafTrax type III printer. The second is the RITEMAN BLUE PLUS which prints 140 cps and has a 96 character ASCII set plus 8 international character sets and 32 block graphic characters. This printer has three modes of operation; IBM graphics printer, Epson RX-80FT, and MX-80 T GrafTrax Type III. It has 128 different typestyles and lets you mix type sizes and styles in the same document. There is a further option for an adjustable tractor feed. The price of this printer is $499.

The RITEMAN II has two memory sizes available, 2K RAM, at $549 and 8K RAM at $599. This printer has 128 character modes and nine preprogrammed international character sets. It prints 160 cps, and even has quiet mode of 80 cps. The RITEMAN 15 also has two memory sizes available 2K for $799, 8K for $849. It features a 15" carriage and adjustable tractor feed. It prints 160 cps, 136 columns wide and also has a quiet mode of 80 cps. It has graphic capabilities in seven densities, 9 foreign character sets, and 128 character modes. In the 8K mode, there is a second character set of 256, which may be redefined as a 9x11 matrix for a custom character set. It is also equipped with push and pull form feed.

RITEMAN LQ is RITEMAN's letter quality printer. It is compatible with EasyScript, Write Now and other software programs. It even handles basic WordStar functions. It also has a unique rotating character drum, which moves at 20 cps, with a maximum of 80 cps. This printer has 96 characters available, and a printing pitch of 12 characters per inch. It comes with a Centronics parallel interface and is bi-directional, and logic seeking, with a 90 day warranty. This last printer costs $299.

Circle 81 on your reader service card.

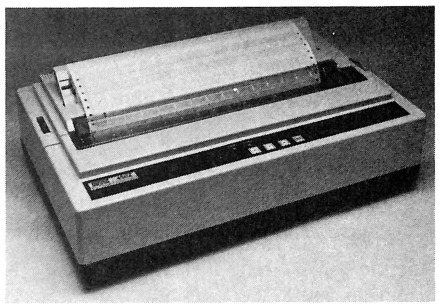
Quiet Printer

Data Terminals and Communications announces a new printer, the DTC 450Z. It prints 45 cps, and produces about an eighth the noise of a standard office typewriter, and can be used continuously all day. Features include a long life 100-character printwheel, in thirty word processing and twenty eight data processing typestyles, with automatic underlining, double striking, shadow printing, subscript, and superscript. Since it uses standard Diablo 630 software command codes, it is compatible with almost all word processing packages.

Other standard features include a serial RS232 and a Centronics parallel interface, "out of paper" and "out of ribbon," bi-directional printing, serial line speeds from 50 to 19,200 baud, and 16,000 character buffer expandable to 64,000 characters. Options include interchangeable printwheels, multi-strike film or cloth ribbons, single and dual bin sheet feeders, bi-directional forms tractor.

For more information contact, Data Terminals and Communications, 590 Division Street, Campbell, CA 95008. (408) 378-1112.

Circle 82 on your reader service card.



The DTC 450Z high speed daisy wheel printer from Data Terminals and Communications.

TurboDOS Made Easy

ProComp Systems announces the publication of *TurboDOS Made Easy*, by Steven Marks, a complete introduction to the TurboDOS operating system. TurboDOS is a fast, powerful operating system compatible with both CP/M and MS-DOS. *TurboDOS Made Easy* covers all aspects of using TurboDOS, with the new user in mind. The book is written in an easy to understand style, and examples are used liberally throughout the book.

For more information, contact ProComp Systems, Inc., 333 West 52nd Street, New York, NY 10019. (212) 246-0074.

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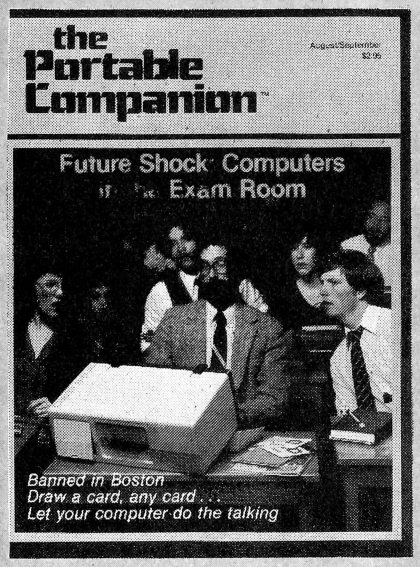

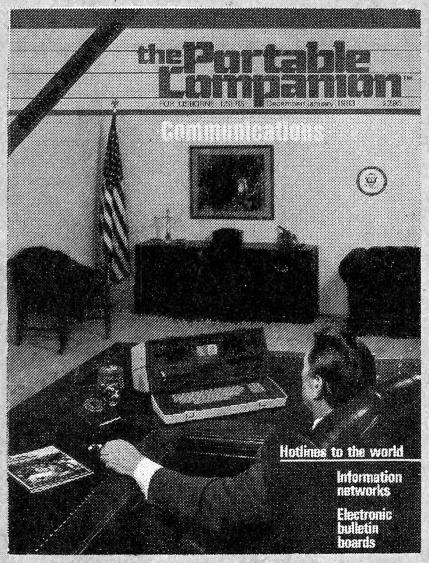

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Epson Salt

I have an Epson QX-10, with a Titan QX-PC (MS-DOS) board/256K, an Epson MX-80 F/T printer, and an Epson LQ-1500 printer. I have had this equipment for just over one year, and have no previous experience with computers. I need to find a source for answers to my problems. This could be a good book that doesn't start assuming more knowledge than a novice has; one that presents lessons step-by-step and gives examples, showing what the operator should get if the directions are followed correctly.

I also have several problems. First, the printer manuals show commands such as "‹esc› E". Some of these work, some do not. Another command is "‹DC2›". I can use some of "‹esc›" types by embedding within the text, but how do I use "‹DC2›"?

Another problem I have is that I want to command the printer to print a text (document file) from the keyboard as a command embedded may not be suitable for all copies.

My last problem is that I want to print only 41 lines on continuous perforated paper 8$^1/_2$" by 11" and have the print roll up to the start of the second page and again print 41 lines, and so on. How do I do this?

I would like a full course on computers, CP/M, and MS-DOS, so that the articles in your publication (and others) would be understood by me.

Charles Brooks,
Phoenix, AZ

Starting with your need for specific information about Epson QX-10 computers, try The Epson QX-10: Everything You Need To Know *(Richard Einhorn, Quill—William Morrow & Co.). For a full course on computers, we recommend the Pournelle Series of computer books from Baen Books, especially the* CP/M User's Guide *(Bove/Rhodes). For MS-DOS, check out* Running MS-DOS *(Van Wolverton, Microsoft Press). An alternative to these books would be a complete set of* User's Guide *back issues.*

As for your need to print 41 lines per page: consult your word processing program's manual for the formatting commands that control printing. You should be able to find a "bottom margin" or "page length" command. In WordStar, for example, you use the `.MB 25` *(bottom margin) command,*

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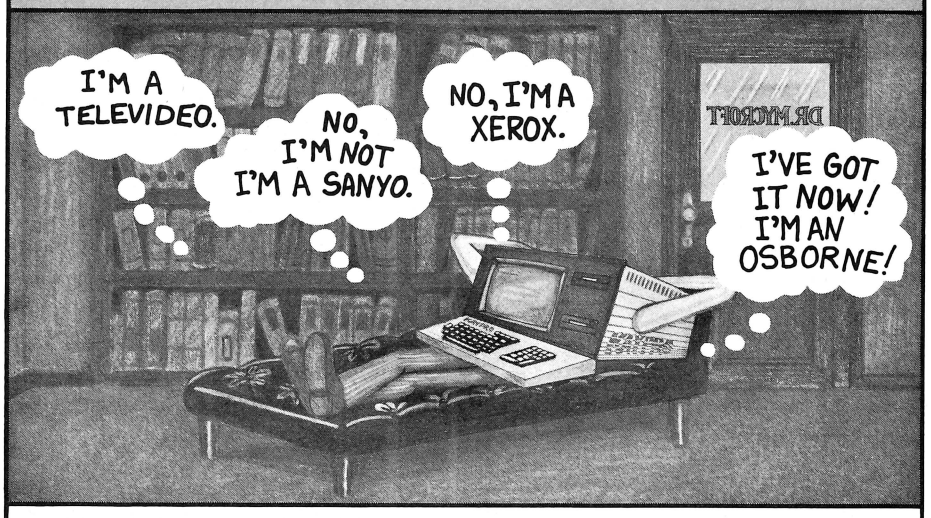

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which creates a bottom margin of 25 lines, which when subtracted from 66 lines (the length of an 11" page) gives 41 printed lines. Note that WordStar's "paper length" (.PL) command is not useful in this situation, because the paper's length is still 66 lines — only the bottom margin has changed.

The "‹DC2›" in your printer manual is equivalent to a Control-R in the ASCII (American Standard Code for Information Interchange) Table. Its ASCII value is 012H ("H" is for hexadecimal) or 18 in decimal. By comparison, the value of "‹esc›" (also known as ESCape) is 01BH or 27 decimal.

You can do away with most of your printer problems by having your word processing program properly installed for the Epson printer. All of the special features (except possibly graphics) should be utilized by the program, and you need only use the program's commands to make the printer work properly.

To enhance your program's ability to perform with the Epson printer, or to use CP/M-level commands to perform special graphics or other printing, you must check in the public domain libraries for programs and information. Your best source for Epson-specific information is the Epson book mentioned above, and the National Epson User Group, Box 1076, Lemont, PA 16851 (they put out a newsletter called the Epson Lifeboat*).*

Good luck out there on the Epson sea.

Love Minus CP/M/
No Limit

Allow me to congratulate you on a tremendously useful double issue. Some months ago, I learned to use Modem7 and the RCP/M's the hard way — by trial and error. Your articles on the subject would have made the task much easier, and I presume they will for many users.

I urge you to limit your editorial focus to CP/M in its various versions. There should be enough of us out here to support such an enterprise, and a

About ZCPR3 and Z3-DOT-COM

Flexibility is the key to ZCPR3 power. Productivity results from optimum organization of operator and machine resources. You are free to create a thinking and working environment that you choose!

ZCPR3 permits quick computer system re-organization for varying tasks, controls your application programs from integrated, easily produced and changed menus. Generation of aliases permit many commands and keystrokes to be converted to a few. Aliases may be used from within menus. One alias may use another. Control is near absolute using supplied utilities. Menu generation determines how computer is used, simplifying and speeding operations. Single from-menu keystrokes activate complex series of commands.

Shells, multiple commands per line, named directories, file search paths, if-then-goto conditional processing, screen oriented utilities — all major features.

Utilities provided permit file and disk management, easy coordination of many application programs from chained menus with full security and password protection. Online and built-in HELP assists understanding details of each command. ZCPR3, the definitive 8-bit CPM-80 compatible operating system, is a hard worker — one you use, learn from, grow and live with!

ZCPR3 is available in two versions: 1) manual-install system using CP/M MOVCPM, SYSGEN, DDT, and MAC; and 2) auto-install Z3-Dot-COM version. Z3-Dot-Com installation procedure is detailed in eleven (11) lines at the bottom of a Command Reference card. The manual-install version is for two-year-or-over computer users and programmers; the auto-install is ideal for CP/M beginners.

1. **Z3-DOT-COM**
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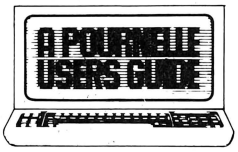
Circle 9 on your reader service card.

high quality magazine devoted to CP/M would do much to keep that operating system's viability high.

Richard Baker
Falls Church, VA

I saw your magazine at the PC Expo show and was impressed. It appears to provide the hand-holding for the popular (and complicated) software packages that dealers promise, that dealers charge extra for, and that dealers seldom, in reality, provide. Here's hoping that your publication prospers.

Andrew Rudiak
Editor, *VictorTalk*



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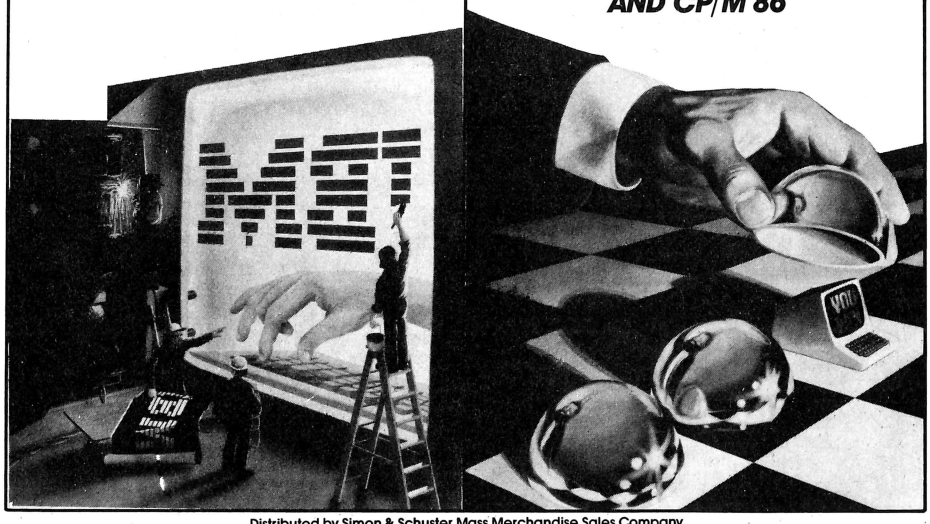

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Perfect Update

Great magazines!!! Makes what seems complicated simple. How about some in-depth tutorials on Perfect Writer (especially the new version which handles tabs properly). I haven't received my updated version yet, but a tutorial would be great in explaining what the updated version does or does not accomplish in the way of making Perfect Writer easier to use.

I have an Access computer, and Perfect Writer came bundled with it. It fought me all the way for a special application that called for an undented style in some areas and indented in others. I finally figured out a way to do the application, but it takes forever.

William Howard
Portland, OR

Osborne Woe

I usually use an Osborne I (double density), and want to know what I can do to add more memory capacity, and/or things like a co-processor, or make it multi-user etc... How can I expand my O-1?

G. Devillers
Luxembourg

What hard disks are available for the Osborne Executive? I own an executive and want to put a hard disk with it. I also need to know if there is any way of making IBM software run on the Executive?

Anonymous

There are lots of products available to expand Osborne computers. For more information we suggest you try The Portable Companion *magazine, available directly from Osborne Computer Corp. (send $25 for six issues to Portable Companion, 42680 Christy St., Fremont, CA 94538). Another valuable resource is the* FOGHORN, *a monthly publication of the First Osborne Group (FOG). We urge you to join FOG (send $24 plus $12 for foreign airmail to FOG, P.O. Box 3474, Daly City, CA 94015-0474).*

FOG members are the best source of information about Osborne computers.

Zorba Modem7

The article on MDM740 (latest version of Modem7 — "Free Software" column by Ben Cohen, issue #11/12) was most informative and helpful. However, your readers should be aware of the fact that many of the overlays listed as "newest" and available from Mr. Cohen have actually been superseded, sometimes several times over. This is no fault of Mr. Cohen's. There is no way that one person or BBS (bulletin board system) can keep up with all the changes. However, I would suggest that any user of MDM7xx check with their own computer users group for further information.

For users of the Zorba computer, the latest MDM7xx overlay is called M7ZB-3.ASM This version corrects several problems in version-1 and contains extensive annotation for Zorba users. It is available from the national Zorba user's group: ZEUS, P.O. Box 40165, San Francisco, CA 94110 (annual membership $25 including six disks with newsletters averaging 130 pages per issue, plus programs.) This version is also available from various Zorba BBS's or from me to anyone who sends a formatted disk with self-addressed, stamped, and sturdy mailer, at no charge. As ZEUS's MDM7xx reporter, I also make sure that the latest versions are on Irv Hoff's home BBS: Wayne Masters' Potpourri (408-378-7474).

I would greatly appreciate your publishing this letter, as with Zorba's manufacturer out of business, and no existing owner list, magazines such as yours are the only way Zorba owners can learn of the existence of a national user's group. Membership is currently over 600.

Randy Brook
Seattle, WA

Spellbound

I would like to suggest that you do a tutorial on the SPELLBINDER word processing program (from Lexisoft). It is listed as one of the more popular word processing programs, but there are no books on it—while there are probably a dozen on how to use WordStar. I purchased SPELLBINDER but have not been able to figure out how to use it, and am probably not the only one in that position.

Phylis Austin
Decatur, GA

A Spellbinder tutorial is in the works. Thank you for your suggestion. We welcome suggestions — write to the UG Letter Editor, P.O. Box 5245, Redwood City, CA 94063. You can also send via MCI Mail to USER'S GUIDE or Tony Bove. For CompuServe EMAIL use 70105,722.

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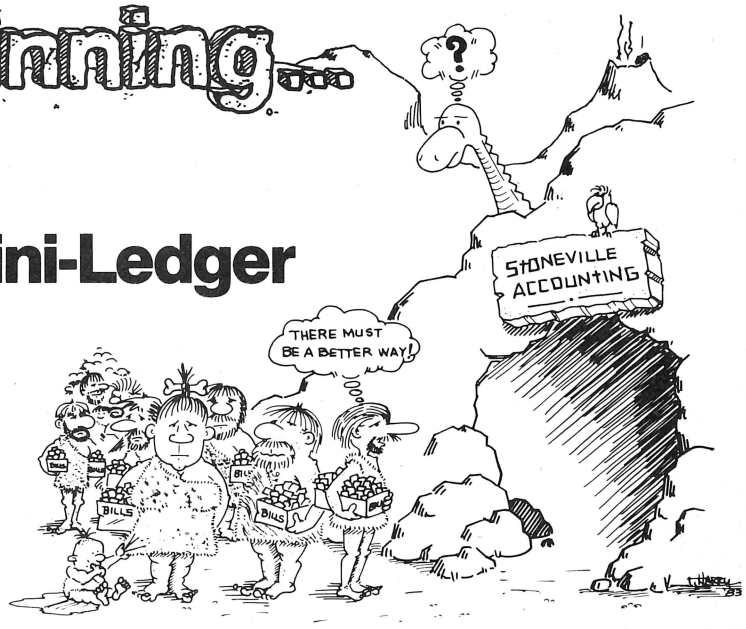

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Local Network of Bowling Centers:
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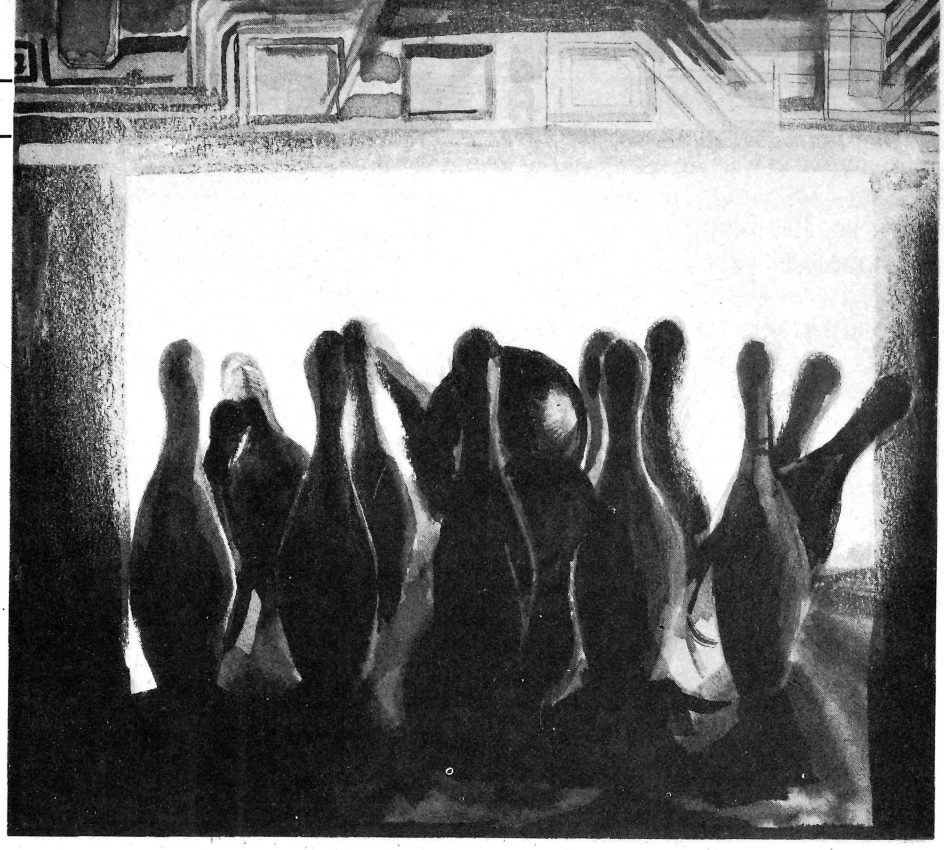
A record-keeping and scheduling system handling over 1000 leagues (50,000 bowlers) in 23 centers.

by Jim Morgan
Illustrations by Chrisann Brennan



Bowling is a universal form of recreation and appeals to people of all ages and athletic abilities, including children barely large enough to roll the ball between their legs, senior citizens who bowl to relax and socialize, skilled amateurs, and professional or semi-professional bowlers who compete to earn a living.

Because there is such diversity in competitive abilities, the rules of bowling can be structured according to the level of expertise. There are about thirty basic variables to consider in setting up league rules. Teams consist of one to five bowlers. Leagues may have as few as two teams or as many teams as the bowl-center can accommodate in one time slot.

Leagues may be comprised of all men, all women, adults, children, or any combination and may bowl one to five games in one league session. Teams may opt to compete on a scratch basis (score versus score) or with handicaps (additional points added to the scores of the less skilled team to help even the competition).

Each league elects a league secretary who is responsible for tracking schedules, scores, high game and series for each bowler, handicaps for teams and individuals, wins/losses, substitutes, and all other variables.

Most league secretaries use the assistance provided by a secretarial service (for a fee). The bowling corporation has twenty three centers, flooring up to six time schedules per day, seven days a week. This involves in excess of one thousand leagues (over fifty thousand bowlers) and can be costly to the centers.

It was the goal of the corporation to find a computer system that could grow as the company grows, be easily operated by existing personnel, yet be modifiable by management to meet possible future requirements.

The corporation has used minicomputers for several years but hoped to have a more flexible system for the secretarial service. Several companies bid on the system, and all but one of the bids recommended a dedicated computer system, with software custom programmed for the system. Quotes to have the application developed on a minicomputer exceeded $150,000 and required upgrading existing hardware at a cost in excess of $25,000.

Our company (ECS) suggested using a network of microcomputers with hard disk storage capacity and an "off-the-shelf" database program. The micros would provide the flexibility and could later include remote micros for handling the data entry requirements at each center. The system could be expanded by adding additional hard disks and micros.

Although many "off-the-shelf" database programs tend to be general and slower in performance than vertical software, it seemed logical to use one because all processing would be performed in batch mode (large groups of data processed at one time with results reported later), and the data would be in typical database format (ie. names, dates, scores, etc.). Support would be easier if the "off-the-shelf" package was well supported with documentation.

Our company, Earthquake Country Software (ECS), was awarded the contract because our knowledge of microcomputers and expertise in developing database applications were es-

Jim Morgan, of Earthquake Country Software (ECS), an information management and software consulting firm, put together the application he describes in this article. The application uses an OSM Zeus 2 network of processors controlled by the CP/M-compatible MUSE operating system, with Condor 3 managing the data base. ECS does not distribute or market these products, nor are the principles connected with OSM or Condor Computer Corp..

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sential to the success of the project. As an added advantage, the principals of ECS are avid bowlers who know the bowling industry. The bottom line was that the ECS bid for hardware and software combined was less than any single bid for custom programming alone.

Choosing a System and a Data Base Manager

We rapidly narrowed the choice of database management programs down to one: the Condor 3 Data Base Management System. Condor is ideally suited to large batch type operations, and is easy to use. We had no trouble modifying the program with a little assistance from its developers. It turned out to be the only database management system structured so that development time could be kept within the proposed budget.

Earthquake Country's strategy was to subdivide leagues into as small a logical group as possible for processing. Ideally all leagues (in each center) bowling on the same day would be entered and processed as a group.

To that end, each bowling center was assigned a user ID (user area) divided into seven blocks (drives), with each block representing a day of the week. This provided the smallest logical group of bowlers for processing at one time. With this design any logical group could cover a range of ages and bowling abilities. It was necessary to establish a universal set of rules, file formats and structures, Condor utilities, and batch procedure programs which would be readily available to each group.

We tested several different systems that use CP/M (the standard operating system for eight-bit microcomputers) and MP/M (a multiple-user version of CP/M) to see if they could support our application as designed. We found that a single microcomputer with a single user could handle a single group with no problem.

When tested with MP/M, our application would not function properly. MP/M prevented User-A from accessing a file opened by User-B until User-B was completely finished with the file. This also applied to program files and universal read only files. Clearly MP/M would not work.

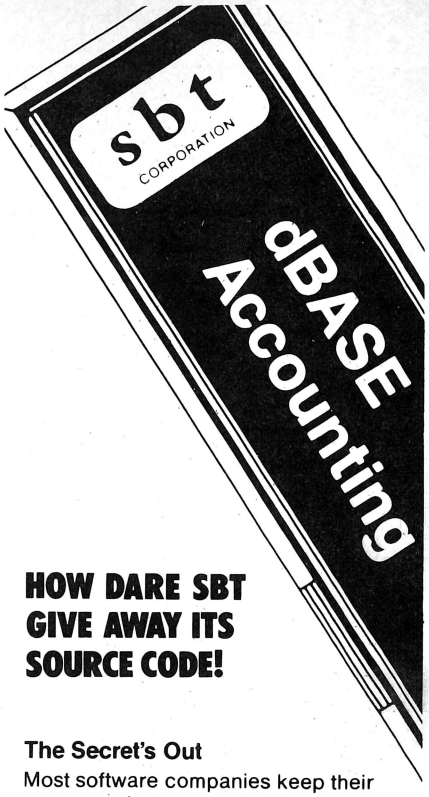
There appeared to be a problem with CP/M as well. Each user required a single microcomputer with storage containing data files of all groups as well as a copy of all programs and file structures.

The Condor package, together with our application and supporting files for the secretarial service, comprised over two hundred sixty five files and required over 1.5 million characters of storage before adding any data. If each logical group required all the files, the overall system would need over two hundred megabytes of hard disk storage just to get started.

We eventually found a multiple-user system which permitted each user to function as a single-user CP/M system. This gave us the best of both worlds. Each user would have unique storage for the data files required for each logical group, but be allowed to go to some central area for a copy of the system files and programs as needed during processing. The budget set for the system was approximately $25,000 (the cost of upgrading the minicomputer from thirty-five to seventy megabytes and expanding memory from 64K to 128K).

The computer system is the Zeus 2 manufactured by OSM. All requirements of the design specification were met by the Zeus 2 system. Using the MUSE (Multi User System Executive) operating system, it was possible to emulate CP/M for each user so that each user appeared to be the only user at any given time.

The Zeus 2 is a local network of microcomputers in a central box. Each user (up to a total of 64) has a dedicated card which contains a Z80 microprocessor with 64K memory and serial and parallel communication ports. The Zeus master computer interfaces with each user and provides the exchange of data to the hard disk and any other peripheral device hooked into the system. To tie into a user port (card), the user connects an inexpensive terminal and has a complete microcomputer system.



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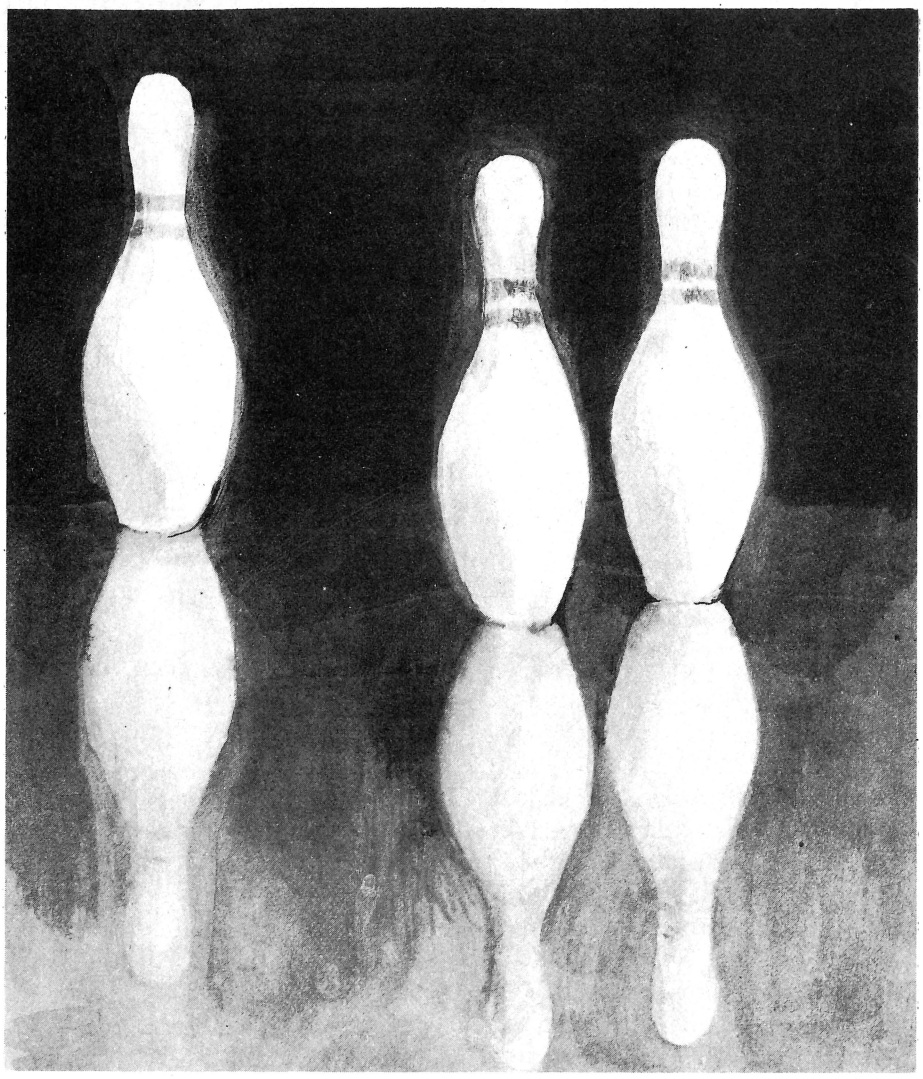

The MUSE Operating System

The real power of Zeus is the MUSE operating system. Each port can access any one of one hundred twenty seven user ID's and up to sixteen disk drives (depending on hardware and configuration). MUSE provides access names and passwords plus many unique features not available on the typical microcomputer.

You can assign during the configuration process a user to a specific disk drive(s) and have an application run immediately when that user "logs on." The user can work on one application and be prevented from having access to other files or programs unless the proper password is used.

The most outstanding feature of MUSE is its ability to direct the search for files or programs along certain pathways until the file or program is found. UNIX and IBM DOS claim to have the same capabilities, but only the MUSE system seems to be totally transparent to the application program. Under IBM DOS, Condor can work only in a specific directory for one user. Under MUSE, Condor works perfectly regardless of the user number, drive, or file location (it appears to Condor that all files are local to the specific user).

The MUSE search capability was the key to structuring the secretarial service. We recommended a seventy-megabyte hard disk with the Zeus 2 system, which is divided into eight logical drives: seven drives of eight megabytes each, and one drive of two megabytes (a seventy megabyte drive has fifty-eight megabytes of usable formatted space). The small drive (drive H) is configured as the master search drive and all database files and programs are placed on user 0 of drive H. Each user would refer to user 0 of drive H for the programs and files.

Since drive A is the boot drive, it requires some of the system files. This reduces the drive A capacity slightly. For use with the secretarial service program, we designated the first seven drives as days of the week, with drive A for Sunday since there are fewer leagues bowling on that day. The eighth drive (drive H) has files stored only on user 0 (user 0 is the common drive that all other users share for data and programs). The system was setup so that MUSE looked first on the current drive (A-G for each day of the week) for the requested file or program, then searched drive H if the file could not be found on A-G.

The day of the week drives hold the actual league and bowler data, a copy of each league's rules and team rosters, and temporary work in process files. The system drive (drive H) stores the Condor database, Condor command verbs, program procedures, and a complete copy of the entire database application (void of any data). For each data file in Condor there are multiple format files, definition files, report files, support files and a dictionary file. These files are used to create each database. Only the data files and the dictionary are kept on each user ID and day of the week drive.

At the CP/M level, Condor acts as if each user in each ID area and drive has complete copies of all programs and files necessary to run the application. Since only copies of the files and programs are loaded into each user's memory, the originals are unchanged and there is never a conflict when accessing files and programs. Only the data files are changed, and these are unique to each user and drive.

To help prevent printer conflicts, MUSE has a print spooling feature. Any reports to be printed are automatically captured by "the spooler" and stored in spooler files on the specific user drive and ID from which they originated. The files are tracked by the spooler in the order created. When the printer is available, the spooled files are printed and removed from storage after completion.

FOG

The **F**IRST **O**SBORNE **G**ROUP (**FOG**) has been formed as a User's Group for persons using or interested in portable computers and/or the CP/M disk operating system with related software. In December of 1984, there were over 15,000 members from around the world. Most attend local group meetings at over 300 locations.

Computer systems owned or used by members include the Osborne 1 (single and double density), the Osborne Executive 1, all models of the Morrow MicroDecision, the Zorba, all models of the KayPro, several MicroMates, and many more. Special interest groups organized to augment a network of local group meetings include dBase II, Ham radio operators, Personal Pearl.

FOG was started in October of 1981 by a small band of early buyers of the Osborne 1. The primary purpose was to organize a library of public domain software to run on the Osborne 1. A newsletter was quickly started to act as a focal point for the group's activities. The large number of excellent contributions to both the library and the newsletter has produced a library of 230 disks (as of December, 1984) and a nicely typeset (70 or more pages) monthly publication. All back issues of the ***FOGHORN*** are available for a nominal fee which includes shipping in the U.S. Contributions are currently being solicited for bulletin board systems in addition to the thirty currently in operation. Most systems accept both 300 baud and 1200 baud. Phone numbers for the first systems are:

System #1 — Daly City, CA	(415) 755-2030	24hrs/7 days
System #2 — Vancouver, BC	(604) 596-0314	24hrs/7 days
System #3 — Daly City, CA	(415) 992-8542	24hrs/7 days

Each of these systems will have a file listing phone numbers for the other systems.

While the meetings are organized on a local basis, over 130 of these local groups have joined the FOG network, thus increasing the sharing of information, tips, problems and so on. Those local groups which opt to formally join the FOG network receive a portion of local member dues to assist with the cost of maintaining a local copy of the disk library.

The FOG library is currently maintained on the Osborne 1 single density format but separate libraries are being established for the other computer formats. The library files are carefully screened and divided into category types (utilities, games, applications, and computer languages are the four major categories). Programs which contain run or other errors are put into the hacker section so interested members can fix them and resubmit for inclusion in the correct section. Items which do not fit into one of these categories are in the miscellaneous section. A catalog and descriptions of all the discs is maintained in the library section.

Dues in FOG are $24.00 per year. This entitles each member to a copy of the ***FOGHORN*** each month as well as access to the disk library. Local group meetings are open to the public without charge although access to the disk library is restricted to the membership. The FOG library contains only public domain software. Piracy (the copying of proprietary software) is strongly condemned.

In the United States, the ***FOGHORN*** is normally mailed by non-profit bulk mail. (FOG is a corporation in the state of California and has obtained its non-profit, tax exempt status from both the state and federal governments.) For those members who live out of the country or who prefer first class delivery of their ***FOGHORN***, additional postage must be added to the annual dues. See the chart below for details.

If you are interested in joining a self-help organization to increase you knowledge and the use of your computer, use the application below (or a copy of it). Generally, memberships received at the FOG office prior to the 15th of the month are entered in time to receive the next month's ***FOGHORN***.

If you know of a local group which might be interested in joining the FOG network, please send all details (meeting dates and places, officers, and how interested local computer owners can join). We will send you an information packet on becoming an Affiliated Member Organization.

For your records, the address of FOG is P. O. Box 3474, Daly City, CA, 94015-0474. Please allow at least two months for the arrival of your first ***FOGHORN*** since bulk mail can take as much as nine weeks. (The post office says that it should only take about three weeks for non-profit bulk mail but some members on the East Coast have experienced longer delays.) A membership card will be processed within two weeks of the receipt of your dues.

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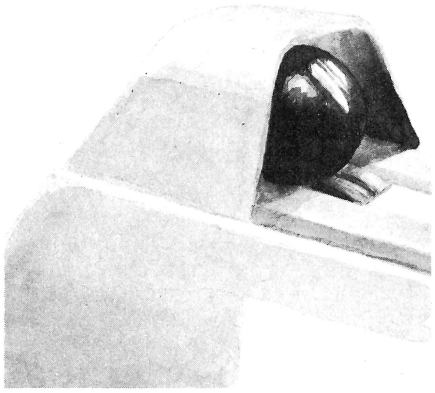


The spooling operation is transparent to users and does not impede or stop the application in progress. The spooler can direct printing to one of two serial printers or to a parallel printer port. Additionally, each user could have a dedicated serial or parallel printer which is under the application program's control.

How It Works

Since there is a complete copy of the entire application, including data files on the system drive H, the only steps necessary to implement a new user (ie. bowling center) are:

1. Establish the LOGON name and password using MUSE.

2. "Log on" to the new user ID you established (Condor automatically starts and displays the main program menu).

3. Select the day of the week for processing.

4. Select the `INITIALIZE DATABASE` option (a copy of the blank data files are moved to the selected day drive under the new user ID).

The above process takes less than ten minutes.

Next, enter each set of league rules. Entering the rules automatically sets up the necessary bowling schedules, creates sufficient blank team rosters for each league, and prints the first week recap score sheets for bowlers. The recap sheets are blank the first week, and each team must fill in the individual team member's names, averages, and scores for the first night of league bowling.

Recap sheets from the first night are sent to the secretarial service for processing. An entry screen similar to the recap sheet is used by the operator to enter league data. The operator types in each bowler's name, scores, and entering average.

When the first week's data is entered, the system enters the bowlers' names in team rosters created by the system. This means that after bowlers' names and averages are entered the first week, it will not be necessary to type bowlers' names for each successive week. Each week the recap entry screen will be displayed with each team member's name. The operator will simply enter the game scores next to each bowler's name. An unknown name typed over an existing bowler name will be considered a substitute for the week unless the system has been advised of a team change by the league secretary.

The entire process is automated except for a manual verification used by the operator once scores, handicaps, and wins/losses are tabulated by the system. Manual verification is for operator entry errors only. If the computer generated totals or wins do not correspond to the hand-written recap sheets submitted by a league, the operator can generate a printed copy of the computer calculated recap sheets. This computer print-out is sent back to the league for verification.

Problems Encountered

There are always some problems encountered when installing and using a computer system. Systems from every manufacturer are prone to failures of some kind. Manufacturers are supposed to expect failures and respond with reasonable service, and OSM does respond.

Within a month of delivery of the OSM system to ECS, the hard disk "crashed" (stopped working properly). With the exception of the time lost, there was no problem getting a replacement drive, and the field installation was a snap. A representative from the distributor hand-carried the new drive to us (surprisingly a seventy megabyte hard drive is about half the size of a briefcase). It was simple to remove and replace several cables and the half-dozen screws that secured the drive. Since there are no instructions on how to disassemble the computer in any manuals supplied by OSM, it has to be obvious what to do.

Two months later ECS took delivery of a second system, just about the time we completed the design and developed most of the software. After the first hard disk crashed, we decided to burn in the new system thoroughly before delivery to the customer. Both systems were placed in the same room; unfortunately the thermostatic controls for that room are located in another office. We proceeded to experience one of those rare northern Californian hot spells and temperatures exceeded one hundred degrees for several days. Both systems crashed.

We were in a panic — in the middle of development with five people working simultaneously on different parts of the software. We had been backing up the system only once a week due to the inconvenience and time involved.

The Zeus comes with a streaming tape backup system. There are two modes of backup: (1) an entire disk drive can be backed up one drive at a time or (2) each file and each user on each drive can be backed up separately. We were backing up an entire drive at a time.

To use this backup mode, you have to re-start the Zeus 2 computer in single-user CP/M mode. The time to copy each drive on tape is approximately fifteen minutes. No other work can be done during the backup period.

The second archive method can be run from the multi-user mode but is slow! The OSM manual states that other users may continue working as usual during the archive process and system performance will be degraded. This is an understatement! The system practically stops, and once the user decides to globally backup all files on a particular drive and user partition,

there is no way to stop the program except to reset the system.

Therefore we used the "shut-down-and-backup" method. However we supplemented the weekly tape backup with daily (or more often) "hard copy" backup (printout) of every new development and every change.

The print spool feature of the MUSE operating system is one of the easiest to use. You print in the usual fashion from your application program or from the operating system, and MUSE copies the information automatically to a special spooler file and tracks the order of printing and where the file was stored (the storage is on the same drive and user ID as the one you were logged into when you started the print operation).

The spooling takes only seconds to occur. You can go on to other tasks or even logoff that user ID. As long as the entire system is not shut down, MUSE will print files from the spooled information until all files are printed. The overhead for printing is not noticed in regard to system use. Another plus is that no special processor board is required to run the spooler. The master CPU uses non-duty time to run the printer.

Although we went through a half dozen boxes of paper, more than one dozen ribbons, and a printer motor, the spooling hard copy backup worked like a charm. So when the system went down due to the heat, we reloaded the last tape and re-edited the restored information to match the last paper copy. It took over two weeks of ulcer provoking frustration to return to two working systems.

Apparently OSM selected components for their system as if the final unit would be installed in a commercial grade computer room with static controls and proper air conditioning. Unfortunately, microcomputers are treated like people in most companies and are subjected to heat variations, etc. Only the hard disks seem to be immune to the heat (although tales have been told of OSM owners kick starting their hard drives in extreme temperature variations).

Due to the heat, our system had components "dying" on boards and cable connectors expanding and coming partially loose. Depending on which component and circuit is dead, it is possible for the entire system to malfunction even though only one of the user boards quit. Between the two systems we had at least one of each type board go out. Trying to get one system up and running was like searching for two or more burned out lights on the old type of Christmas tree lights.

Since OSM is located within twenty miles of our offices, we decided to hand the defective boards to them and obtain replacements. However, it wasn't quite that easy. OSM doesn't always have replacement boards available. After waiting for boards, we received reworked or repaired boards. Once these boards begin to fail, they seem to continue to do so. During the two week period, we went through approximately twenty boards to find seven boards that would work and remain operational.

It seems like every time the system is powered down or started up, there is a fifty/fifty chance that one of the boards would fail. By the time we had two working systems, we had user boards covering a wide range of serial numbers and seven different revision numbers.

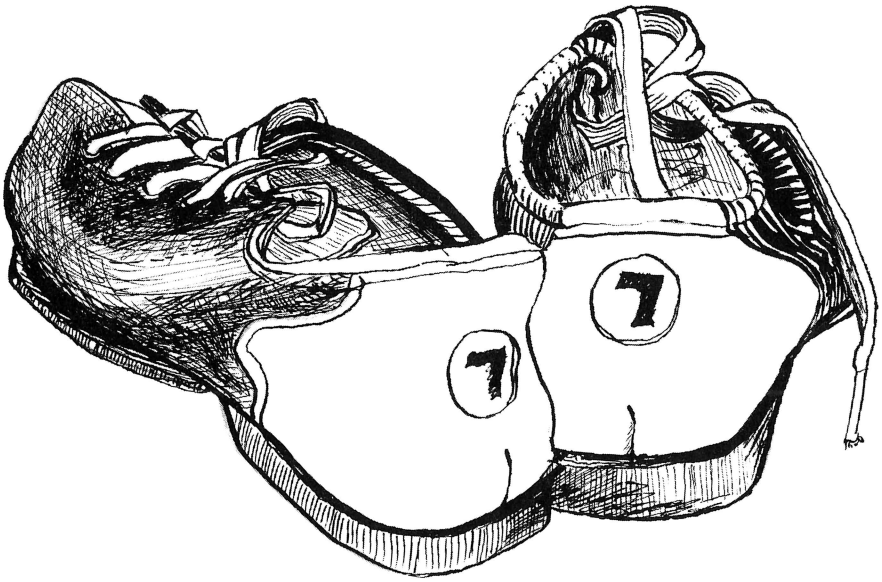
We don't know if the system failures stopped because it got cooler or we got smarter, but when we stopped shutting down the system when it wasn't in use, the failures stopped.

Note: The OSM has the ability to put the hard disk to sleep without removing power from any of the boards. Now if we have to move the system for any reason, we pull the plug and the built-in uninterruptable power supply maintains the circuit boards during the move.

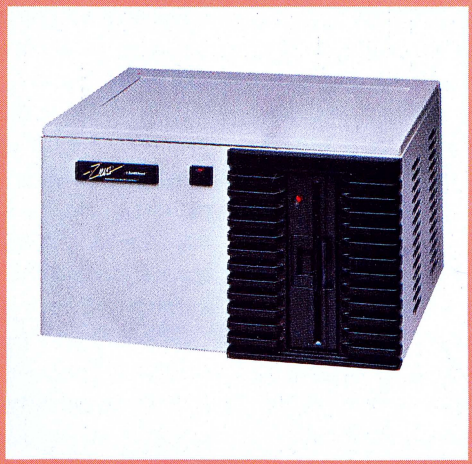
Other than static discharge to a terminal (which locks up the entire system), the only additional problem we had was in hooking up a commercial line printer to the parallel printer port on the main CPU. Even though the product literature states that the system comes with serial and parallel printer ports for both the master and user boards, there was only one printer connector available on the unit. The catch word here is "ports." The ports exist but there is no way to connect the printer to the port — the port is actually pins on the board. To hook up printers it is necessary to purchase cables and connectors separately.

There is little problem hooking serial printers to the Zeus. There is some software intelligence built into the spooler to interface with printers. Although there are ports available, apparently OSM never intended to support parallel printers. This is a bare bones system with none of the normal feedback or control signals.

The parallel connector we received was a twenty wire flat cable with a centronics connector on one end and a



Using the MUSE (Multi User System Executive) operating system, it was possible to emulate CP/M for each user so that each user appeared to be the only user at any given time.



The Application:

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Zeus System

The Zeus 2 from OSM is a local network of microcomputers in a central box. Each user (up to a total of 64) has a dedicated card which contains a 4MHz Z80 microprocessor with 64K memory and serial and parallel communication ports. The master computer interfaces with each user and provides the exchange of data to the hard disk and any other peripheral device hooked into the system.

The Zeus 2 and other Zeus computer systems are from OSM Computer Corp., 655 Clyde Ave., Mountain View, CA 94043.

Condor

The Condor 3 Data Management software is from Condor Computer Corp., 2051 South State St., Ann Arbor, MI 48104 (313-769-3988, 800-854-7100 x165 or in CA call 800-422-4241 x165).

Condor 3 is described as a fully-relational system, and a "lighter" version, Condor 1, is described as an advanced file manager. The package is available for CP/M, CP/M-86 and MS-DOS systems.

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nine pin socket on the other. The parallel port on the master board has twenty pins and all but pin thirteen are connected. Only the drive lines and ground are monitored by the spooler software. The parallel port on the user boards has thirty four pins and is wired differently than the port on the master board. The same cable can not be used for both boards; however, the cable for the serial ports is fully compatible regardless of the board.

The software intelligence for the spooler, in reference to the master parallel port, monitors the printer voltage line. If the printer is not connected, the data is sent down an empty line. If the printer is jammed, out of paper, or not "on-line," the data is also lost.

The information to the parallel printer is not handled through the spooler as efficiently as the serial print output. The serial printer works with busy states and Zeus will poll the printer as needed. If the system thinks the parallel printer is busy, it will "wait till the cows come home" before it will process any other user information. The only solution is a complete system reset.

It took us the better part of two days at the customer's site trying to figure out why the system didn't work with the serial printers at our office. There is nothing written in the manual and only one person in the factory seemed to partially understand how it worked. The manufacturer of the printer refused to review the problem until we paid them one hundred dollars in advance, and the cables manufactured by OSM are wired incorrectly.

Conclusion

In all fairness, the OSM Zeus 2 system meets our design requirements at a savings that could not be matched by another system configuration.

The unique combination of Condor package and the OSM MUSE/Zeus 2 system made a difficult task possible and kept the system cost down to less than half the cost of custom programming on a minicomputer.

Squeeze/unsqueeze *continued from page 25.*

```
Output drive = B:
NSWP205.DQC -> NSWP205.DOC

*OTHER11.TQT C: ↵

Output drive = C:
OTHER11.TQT -> OTHER11.TXT

*^C
A>
```

With USQ version 1.20, you can put the destination disk drive either before the filename to un-squeeze, as in the first example above:

```
*B: NSWP205.DQC ↵
```

Or you can put the destination drive after the filename, as in the second example:

```
*OTHER11.TQT C: ↵
```

You exit this version of USQ by typing a Control-C.

Squeezing Files With SQ

You can squeeze any file, but squeezing executable ".COM" or ".OBJ" files does not shrink them significantly. An ASCII text file or program source code file (which is usually text) may reduce to between 65% and 52% of its original size.

When SQ squeezes a file, the data in the original file is looked at byte by byte. These bytes can contain anything. The squeezing operation first compresses repeated byte values into a code, then it generates a "Huffman code" to match the characteristics of the file. A "decoding table" is stored in the squeezed version of the file; therefore, squeezing very short files can actually lengthen them.

You can provide filenames, drive letters and options for SQ on the command line (as with USQ shown above), or in response to SQ prompts. You can also provide them from a file you already saved with the information.

Before squeezing, be sure you have enough space on disk to fit another file that will be at least two-thirds of the size of the original file. Here's an example of SQ:

```
A>SQ CHAP1.TXT ↵
```

SQ creates a squeezed file using the name the original file had when it was squeezed, but substituting a "Q" for the middle character of the three-character extension, thereby creating the file CHAP1.TQT.

To put the squeezed file on a disk other than the one holding the original file, specify the "destination disk drive" first (the one to hold the new squeezed file), then the filename of the original file:

```
A>SQ B: CHAP1.TXT ↵
```

The space between B: and the filename tells SQ that B: is the destination drive, not the drive holding CHAP1.TXT. If the first parameter of SQ is a drive letter without a filename, SQ assumes it is the destination drive.

You can squeeze more than one file, and on more than one disk drive, by naming more than one on the command line:

```
A>SQ CHAP1.TXT B:CHAP2.TXT ↵
```

This command creates the squeezed file CHAP1.TQT on drive A, and creates CHAP2.TQT on drive B.

The original files are not disturbed. You should keep at least one copy of the original file in case you mislaid your USQ or other un-squeezing utility. Squeezed files are excellent for archiving because they take up less space; however, you must remember to keep copies of USQ or another un-squeezing utility handy.

When you type more than one filename with SQ, each file is processed in order. You can type as many filenames as you can fit on a command line. However, the filenames you give to the original versions of SQ must be *specific* names, not ambiguous filename matches.

More recent versions of SQ will accept filename matches using the * and ? symbols:

```
A>SQ *.TXT ↵
```

This example squeezes all ".TXT" files on drive A.

To squeeze many files with SQ, type the command SQ followed by Return to get the SQ prompt. You can then type SQ expressions that are executed immediately, and stop SQ by typing a Control-C in the assembly language version (1.11), or Return on a line by itself in older versions (similar to using PIP in CP/M). The following example shows the assembly language version (SQ111):

```
A>SQ111 ↵
SQ v1.11
Use: SQ afn [afn afn ...] [destination drive:]

*B: NEWCHAP1.TXT ↵

Output drive = B:
NEWCHAP1.TXT -> NEWCHAP1.TQT

*PROG101.DOC C: ↵

Output drive = C:
PROG101.DOC -> PROG101.DQC

*^C
A>
```

With SQ version 1.11, you can put the destination disk drive either before the filename to un-squeeze, as in the first example above (NEWCHAP1.TXT), or after the filename,

as in the second example (PROG101.DOC). You exit this version of SQ by typing a Control-C.

Directed Input/Output With SQ/USQ

If you frequently squeeze or un-squeeze the same files and you want to perform the operation without having to type the list of filenames again and again, you can create a *parameter list* of SQ or USQ parameters for the operation, and supply the parameter list to SQ or USQ as a file.

For example, you could create (using a text editor) a file named CHAPTERS.PAR to hold the filenames of each chapter of your book:

```
CHAP1.TXT ↵
B:CHAP2.TXT ↵
C:CHAP3.TXT ↵
C:CHAP4.TXT ↵
↵
```

You would end this list with a blank line as shown (a line with a Return (↵).

You can then use the following SQ command to squeeze all of these files at once:

```
A>SQ <CHAPTERS.PAR ↵
```

SQ takes its parameters from the file following the < symbol. Each file is squeezed as if you typed the SQ command by itself, then typed each filename to the SQ prompt. The final blank line (line with a Return only) sends a Return to SQ to stop the SQ program.

This is called *re-directed console input* in computer jargon. We call it *directed input*. The input is directed to the program from a file.

SQ and USQ both display comments and error messages if any errors occur during the squeezing or un-squeezing process. In a long operation these comments and messages can scroll off the screen (it is assumed you are watching for them and reading them).

If you wanted to start such an operation but didn't want to watch for messages, you can direct the output of the program to a file that you can look at later.

For example:

```
A>SQ <CHAPTERS.PAR >OUTFILE ↵
```

This command sends any progress reports, comments or error messages resulting from the squeezing operation (whose parameters are in CHAPTERS.PAR) to the file OUTFILE. You can display OUTFILE later with the TYPE command.

This is called, predictably, *re-directed console output* in the jargon. We call it *directed output*, to the file following the > symbol.

What if you want the console output directed to *both* the console where you can see it, and a file where you can view it later? Use a plus sign (+) in place of the > symbol:

```
A>SQ <CHAPTERS.PAR +OUTFILE ↵
```

The FLS Pipeline to SQ/USQ

Richard Greenlaw invented the FLS program to put together a parameter list for SQ or USQ on the same command line. FLS lets you use * and ? as filename match symbols to refer to several files at once. You can also use directed input and directed output on an FLS command line.

To show how FLS can simplify operations, here's an example that un-squeezes all ".DQC" files on drive B and sends the results to drive C, and also un-squeezes all ".TQT" files on drive A and sends the results to drive D:

Example #1.

```
A>FLS C: B:*.DQC D: *.TQT |USQ ↵
```

In this example, the first drive (C:) is the destination for the next un-squeeze operation (on B:*.DQC, all ".DQC" on drive B). The next drive (D:) is the destination for the subsequent un-squeeze operation (on *.TQT, all ".TQT" files on drive A).

This example simulates what is called a "pipe" in some sophisticated operating systems. The vertical bar symbol (|) indicates that the parameter list built by FLS should be "piped" or fed into the program USQ.

How does FLS work? Here are examples designed to show how FLS prepares parameters for SQ or USQ:

Example #2.

```
A>FLS C: B:*.DQC D: *.TQT >TEMP.$$$ ↵
```

This FLS command passes the parameters to the console output file TEMP.$$$. FLS knows that a letter followed by a colon and nothing else is a destination drive name intended for SQ or USQ.

With TEMP.$$$ containing the parameters from the above example, you could use the following commands to direct the parameters from the TEMP.$$$ file to USQ, and erase the temporary file TEMP.$$$:

Example #3.

```
A>USQ <TEMP.$$$ ↵
A>ERA TEMP.$$$ ↵
```

The commands in examples #2 and #3 can be shortened into the one FLS command we used in example #1. In example #1 we used the FLS command with a "pipe" (the symbol "¦"), which has the same effect as creating a temporary file (like TEMP.$$$), and then using it as input to the USQ program, and finally deleting it.

Here are more examples of using SQ, USQ and FLS:

```
A>FLS *.?Q? ¦USQ ↵
```

This example un-squeezes all squeezed files on the current drive and puts the resulting un-squeezed files on the same drive.

```
A>FLS D: B:*.ASM C:*.ASM ¦SQ ↵
```

This example squeezes all ".ASM" files on drives B and C, and puts the squeezed files on drive D. Note that without the D: drive parameter first in the parameter list, the squeezed files would have been put on drive A.

```
A>FLS C:*.TXT +NEW.PAR ↵
```

This example builds a parameter list of all ".TXT" files on drive C and stores the list in NEW.PAR; the output is also displayed.

```
A>SQ <NEW.PAR ↵
```

This example shows the parameter list file NEW.PAR, built in the previous example, used as input to SQ.

```
A>FLS B: *.TXT *.DOC ¦SQ >OUT ↵
```

This example squeezes all ".TXT" and ".DOC" files on drive A and puts the squeezed files on drive B. The progress report and any error messages are directed to the file OUT.

SQ, USQ and FLS are available as source code files for you to modify if you wish. More detailed comments about the squeezing and un-squeezing operations are included in these source files.

Squeeze & Un-squeeze For MS-DOS/PC-DOS

Like the Squeezer utilities for CP/M systems, there are squeezing and un-squeezing utilities for the IBM PC running PC-DOS and PC-compatible computers running MS-DOS.

SQUEEZE.COM (version 1.8) compresses programs, text files and data. It searches for continuous character patterns like blanks. These characters are saved once with an indicator of how many times they appear consecutively in the file.

Compiled programs compress only a little (often to no more than 94% of the original size). Text files and hexadecimal files compress to as little as 50% of the original size, depending on the nature of the data in the file.

To compress a file type:

```
SQUEEZE filename.ext ↵
```

SQUEEZE creates a new file with compressed data from the file you specified (`filename.ext`), changing the name only by substituting a "Q" for whatever is the middle letter of the extension (`.ext`). For example, if you squeeze the file SAMPLE.TXT, the newly-created file is called SAMPLE.TQT. If no extension is given for the file being compressed, SQUEEZE.COM adds the extension ".QQQ" to the new file.

SQUEEZE.COM is fast. A file over 100,000 bytes can be squeezed in just minutes. You also have the option to show the compression on your monitor while it is being done. You do this by placing a dash (-) between the program's name and the name of the file being squeezed:

```
SQUEEZE - filename.ext ↵
```

You decompress a squeezed file with UNSQUEEZ.COM. It reads the special information placed in the squeezed file, then expands the file back to its original size and contents.

To un-squeeze a file, the file's extension must have a "Q" as the middle letter (e.g., ".TQT" and ".QQQ"). Type the following command to un-squeeze a file:

```
UNSQUEEZ filename.eQt ↵
```

End of Lesson

The Squeezer utilities are useful in a variety of applications because they can squeeze any type of file. In the long run the utilities will save you money in disks and in transmission costs.

However, be aware that the contents of squeezed files will not be recognizable if you are searching memory for it. For example, if your disk develops a bad sector and you're searching for a squeezed file using DU, chances are you won't find it because you won't understand the ASCII display of the squeezed code. The only defense against this is to make backup copies! Make sure you have one or more copies of the squeezed file on other disks.

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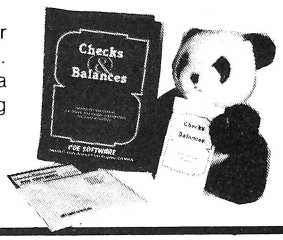

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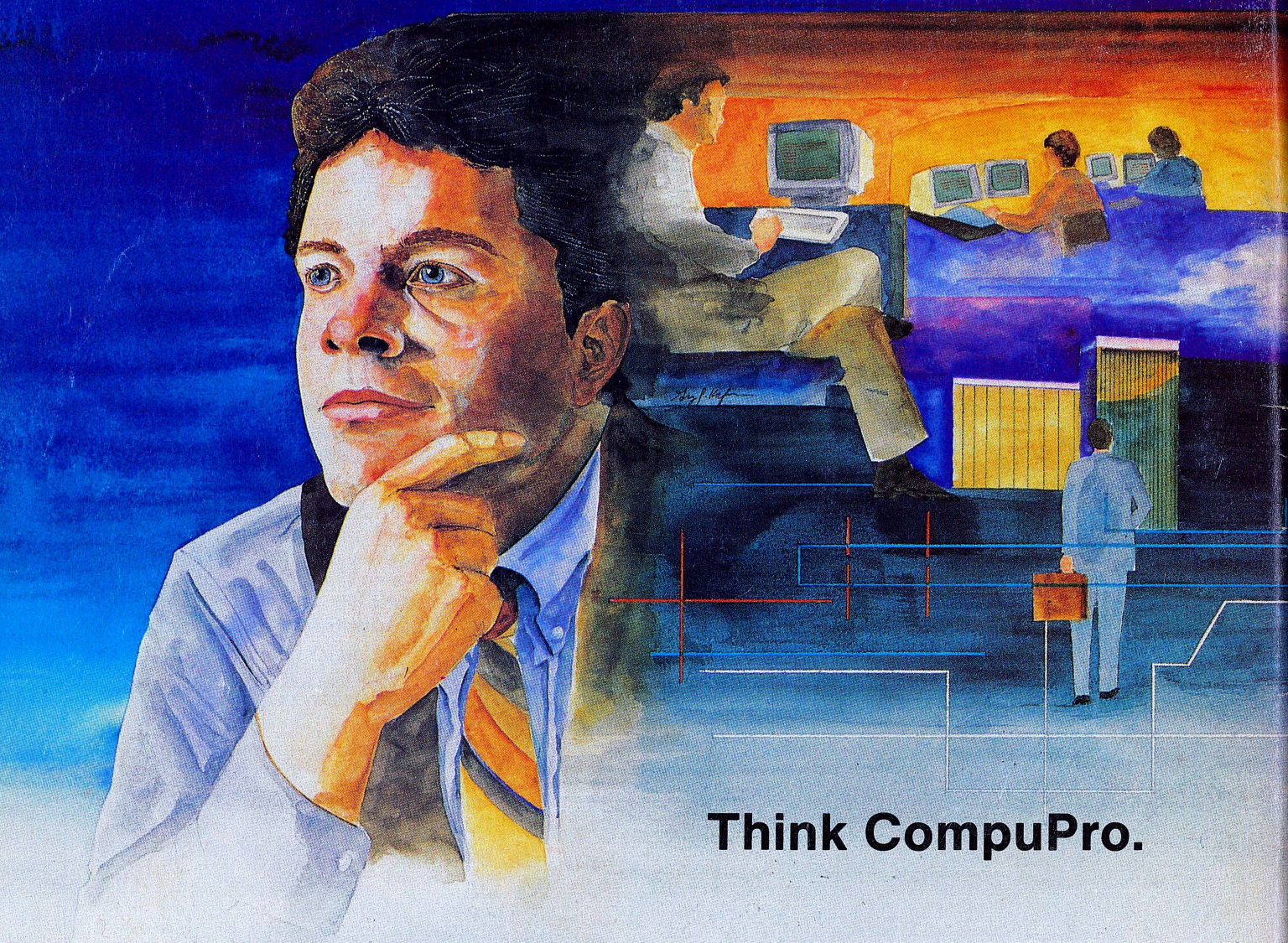

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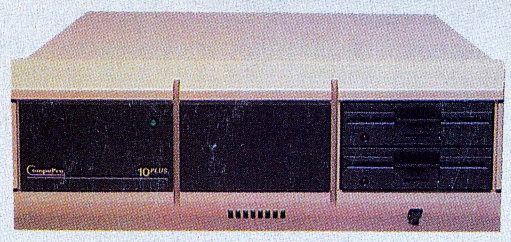

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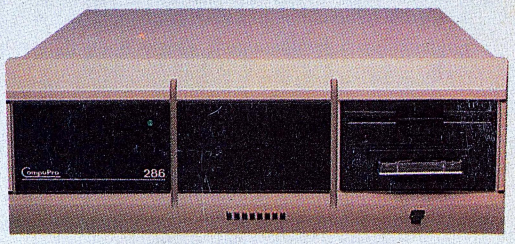

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